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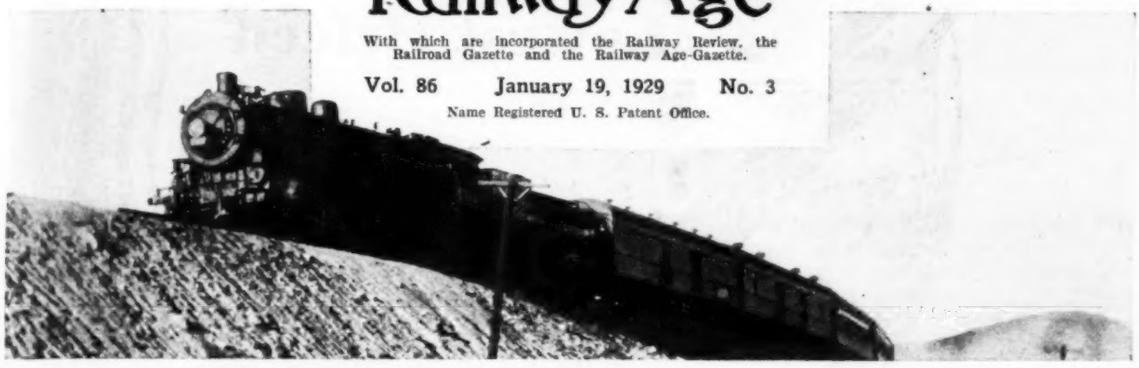

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Contents

Depreciation as a Factor in Railway Valuation ..... Page 187

Edwin F. Wendt, consulting engineer, Washington, D. C., gives history of the study of this important subject by the Bureau of Valuation of the Interstate Commerce Commission.

How an Operating Man Views the Virginian Electrification ... 193

F. L. Johnson, assistant to the vice-president of the Chicago Burlington & Quincy, tells of the benefits of electrification resulting from a study of the Virginian electrification made by an observer from another railroad.

Great Western Follows First Principles in Buying 199

A. C. Simmons, purchasing agent of the Chicago Great Western, tells how this road avoids unwise purchasing and keeps inventories down by watching requisitions.

EDITORIALS

Reducing Transfer Costs 183
Modernized Power Plant Saves $1,000 a Week 183
Hoch-Smith Idea in Britain 183
A New Advertising Medium for Railways 184
Many More Air Lines Expected This Year 184
Shop Made Materials 184
Returns on New Investment 185
Should Gangs Be Smaller 185
Holding up the Railways 186

GENERAL ARTICLES

Depreciation as a Factor in Railway Valuation, By Edwin F. Wendt 187
Charles Donnelly Discusses Shrinking Revenues 192
How an Operating Man Views the Virginian Electrification, By F. L. Johnson 192
Graphic Speed Recorder and Mileage Counter 196
De Luxe Motor Train Exhibited 197

GENERAL ARTICLES—Continued

Freight Car Loading 198
Great Western Follows First Principles in Buying, By A. C. Simmons 199
Stopping Trains by Use of the Conductor's Valve, By G. E. Terwilliger 202
Six-Cylinder 180 H.P. Diesel 204
Radio Audiences Hear Opening of Cascade Tunnel 205
Safety Section Recommends Contests 207
Baltimore & Ohio 208
Protecting Coal While in Storage 210
Commissioner Meyer Discusses Hoch-Smith Resolution 211
I. C. C. Appropriations Recommended 213

COMMUNICATIONS AND BOOKS 214
LOOKING BACKWARD 215
ODDS AND ENDS OF RAILROADING 216
NEWS OF THE WEEK 217

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Railway Age

Vol. 86, No. 3 January 19, 1929

Table of Contents Appears on Page 5 of Advertising Section

Reducing Transfer Costs

THE money expended in transferring the lading from bad-order cars is a net loss to whatever line ultimately pays for it. Hitherto, in many cases, the transferring of cars has been left largely to the local forces and has not been given the close attention that it deserves. Largely because of the activities of a committee of the American Association of Railroad Superintendents, however, this situation has changed somewhat. The committee has pointed out the discrepancies that exist at various terminals in this regard, and has conducted investigations, the results of which have indicated the necessity for action in standardizing transfer practices and putting them on a more economical basis. At least one road has undertaken cost studies at each of its transfer points. These studies should be interesting, when completed, and should enable the management to take steps to reduce the cost of transfers materially. Similar action might prove valuable on other roads as well.

Modernized Power Plant Saves $1,000 a Week

AS the result of extensive changes in its principal steam power plant, following a carefully planned three-year modernization program, one large railroad has saved over $52,000 a year. The new facilities installed in connection with the rebuilding of this plant cost $126,000, the saving effected thus being 41 per cent of the cost. Originally, this plant, erected in 1905, included three steam engines direct-connected to three d-c. generators; another reciprocating engine connected to a fourth d-c. generator; and a steam-driven air compressor. While this equipment proved to be well adapted to the shop's power demands for an extended period after its installation, later shop developments made it necessary to make an engineering survey of this plant to provide for the future. Considerable attention was devoted to a selection of the particular type of power-house equipment that would serve the purpose most efficiently. This led to the installation of two mixed-pressure turbo-generator units. During the winter, exhaust steam from blacksmith shop tools, together with steam bled from the turbines, is employed for shop heating, while in the summer, exhaust steam from shop sources is introduced into the turbines. A synchronous motor-driven air compressor replaced the steam compressor and a motor-generator set was provided to furnish d-c. current to certain machine tools and traveling cranes. The electrification of power house auxiliaries was extended to include the ejector water pump and spray pond pump. The economy of the present electrified power plant equipment has convinced the management that an even greater saving can be made by replacing the present boilers with four boilers of improved design, equipped with superheaters and by installing modern coal and ash-handling equipment. With these contemplated improvements, this railroad power plant will compare favorably with any public utility station of similar generating capacity. The price of such efficiency, however, is the thorough attention given to the modern refinements of power-plant design, which a power company is, of necessity, forced to give.

Hoch-Smith Idea in Britain

ANALAGOUS to the action of Congress in its passage of the Hoch-Smith resolution, but much fairer to the railways, is the plan of statutory rate relief for depressed British industries which is to become effective on October 1, 1929. The plan provides that railways shall be relieved of certain local taxes and that they in turn shall allow rebates from published rates for the transportation of designated products of industries selected, because of their depressed state, as eligible for such relief. In order that immediate relief might be given, however, a scheme in anticipation of the statutory plan was formulated to remain in effect from December 1, 1928, to October 1, 1929. Under this anticipatory scheme a sum of £3,333,333 ($16,233,332 is set up to reimburse the railways for such rebates as they may grant shippers during the term in which the temporary plan is operative. The fund, known as the "Railway Freight Rebates (Anticipation) Fund," is to be administered and controlled by the Railway Clearing House. This organization is authorized to pay "to each of the companies a sum or sums equal in the aggregate to the amount of rebates allowed by the company" in accordance with the provisions of the plan. Railroads in turn are required to allow rebates to any eligible shipper and to take reasonable steps to prevent irregularities in the granting of these allowances. Such balance as remains in the fund at the termination of the anticipatory plan is to be delivered into any corresponding statuatory fund which Parliament may establish when the legislation becomes effective on October 1. If the fund be insufficient, the deficit is to be apportioned among the participating carriers. Thus, as in the case of the Hoch-Smith resolution, the British government is attempting to bring prosperity to depressed industries by manipulating the freight rate structure. Unlike the Congressional enactment, however, it does not contemplate forcing the railways to subsidize these depressed industries but, itself, sets up the machinery of subsidization. Furthermore, it recognizes the depressed state

of the railways themselves in its provision for their relief from certain tax burdens. The plan also gives evidence of a belief that sound public policy demands greater participation by automotive vehicles in defraying highway costs, since losses by remission of local taxation of railways and other industries are to be met by an increase of eight cents per gallon in the tax on gasoline.

A New Advertising Medium For Railways

THE railways have not been as quick to seize upon the radio as a means of advertising their one salable commodity—transportation—as have other groups of industry. Their hesitation is perhaps justified in that the advertising value of a radio program remains to be proved. During the last year, however, several roads, including the Chicago & Eastern Illinois and the Pennsylvania, have broadcast programs from single stations, designed to stimulate travel. But it has remained for the Great Northern to make the first large scale effort by any railway to adopt the radio to its use. A broadcasting chain of 38 stations distributed throughout the country carried the program dedicating the Cascade tunnel, on January 12, to an audience estimated to number between 10,000,000 and 15,000,000 persons, the total which was augmented by the presence on the program of two persons whose names are household words. This was the first of a series of 23 weekly programs sponsored by this road over the entire chain, and intended to develop an interest in the Great Northern and its territory, which is expected to attract about 2,000,000 persons weekly. Other railways, in search of further methods of increasing their business and prestige, will undoubtedly watch this experiment to determine the value of the radio as a medium of publicity, since the United States alone boasts 10,000,000 receiving sets, each estimated to serve an average of four listeners.

Many More Air Lines Expected This Year

ALL indications at the present time point to a rapid spread of passenger airplane lines during the coming spring and summer. A number of such lines were established last year, but these are expected to be somewhat overshadowed by the number of new lines to be put into operation during 1929. Several factors are entering into the present situation. Many of the passenger air lines in operating during 1928 carried a very substanial number of passengers, and this has been taken by a number of interests to indicate a public demand for passenger service by airplane which they propose to meet through the operation of new lines of their own. Another factor is the progress which has been made in the design and construction of large airplanes of the transport type, which provide accommodations for more passengers, and facilities for the greater comfort and safety of passengers. Probably the most important factor in the situation, however, is the beginning of keen competition between the air lines themselves. During the first years of the development of air transportation, and even up to the middle of 1928, this competition was at a minimum. Each line held itself more or less strictly to its own territory, and refrained from spreading out into the territories covered by neighbor lines. During recent months, however, numerous consolidations of air lines have taken place, involving lines in several parts of the country, and establishment of these large air systems has been followed by direct competition between some of them. The plans of the various air lines already announced indicate that they propose to expand their operations greatly during 1929, in many cases making their entrance as competitors into fields already provided with air service for passengers. From the standpoint of the railways, excepting those financially interested in air transport companies, the effect of the broad spread of air lines this year will probably not be particularly great, although it is only natural to assume that the ready availability of many passenger air lines will win some passenger traffic from the railways.

Shop Made Materials

INFORMATION from several railways indicates that stores departments experience more trouble and delay in getting materials from their own shops than from dealers. If the volume of this shop work were small, there would be little occasion to comment about it, but conditions are quite the opposite. The material which the railway storekeeper obtains in this manner, instead of by purchase, is generally of three kinds. A large part comprises picks, bars, chisels and similar articles which are sent to the shops for repair. Then there are materials which are bought in the rough and finished in the railroad shops, and also a lot of supplies which the shops manufacture. The supposition is that these materials cannot be obtained by purchase, or they cannot be obtained quickly enough in this way, or they can be made more cheaply than if purchased. The theory behind these store orders on shops is usually plausible, but the practice does not always match with the facts. Quite often the workmanship is faulty and the entire expenditure is largely wasted, even if the work is done promptly. Frequently shops fail to segregate the actual expenses for shop order work from locomotive and car repair work, with resultant overcharging for shop-made material. Often the shops, chiefly interested in car and locomotive output, hold stores work for slack periods, and again the economical shop may rightly rebel at setting up machinery to do work for the stores department when the latter fails to order sufficient quantities to justify the expense. But whatever the causes may be for the difficulties in shop order work, the fact is that dealers in railway supplies, some of them situated long distances away and whose products are subject to inspection before acceptance, which company-made material seldom gets, are in a great many cases filling orders in less time and with less trouble than are required for a railroad to get the same materials from its own shops. It may be that the conditions which led to the increase of shop order work in the war period have largely been reversed, and that the considerations of getting material without fail, getting it cheaply and getting it promptly might now be better served by a reduction in shop order work when, generally speaking, the railway supply trade has proved itself efficient and diligent in meeting its obligations.

Returns on New Investment

THE railways have made a large investment in their properties since they were returned to private operation, and especially since 1922. The public has received in improved service large benefits from this new investment, without which the improvement in service could not have been made. What benefits have the railways received from it?

This question may be answered from two different standpoints—from the standpoint of the economies in operation that have resulted, and that of the return earned upon the new investment. The investment in Class I roads (exclusive of switching and terminal companies) on January 1, 1923, was $20,901,000,000. On January 1, 1928, it was $24,817,000,000. The increase in five years was $3,916,000,000. These are the latest statistics of the Interstate Commerce Commission, and the increase in investment is arrived at after allowing for property retired and charged off during the period.

The reduction in annual operating expenses between 1923 and 1928 was about $500,000,000. This reduction was rendered possible mainly by investment in improved facilities which resulted in large savings of labor, fuel and materials. Some investment is made, of course, to handle traffic more satisfactorily or to handle more of it. Some is made solely for the purpose of effecting economies in operation. From the standpoint of economies in operation the results have justified the new investment.

But has it been justified by the increase in net operating income secured? Losses of passenger business, reductions of rates and advances in wages prevented most of the reductions in operating expenses from being converted into increases in net operating income. The Interstate Commerce Commission has virtually held that valuation of the railways should be based upon "prudent investment." It has held they are entitled to an annual return of 5-¾ per cent upon a valuation made on this basis. Unless it should be held that part or all of the investment made since January 1, 1923, has been imprudent it would have to be held, on the commission's principles, that the railways have been entitled to an increase in net operating income sufficient to yield a return of 5-¾ per cent upon this additional investment. To pay a return of 5-¾ per cent upon the increase in investment of $3,916,000,000 would require $225,000,000 annually.

The net operating income earned by the railways mentioned in 1923 was $962,000,000. The amount earned by them in 1928 was approximately $1,162,000,000. The increase was approximately $200,000,000, or sufficient to pay a return of only about five per cent upon the new investment and $25,000,000 less than sufficient to pay a return of 5-¾ per cent upon the new investment.

The railways as a whole have failed in every year since they were returned to private operation to earn a return of 5-¾ per cent upon the tentative valuation made by the Interstate Commerce Commission in 1920, plus the investment since made. There are persons who still say they are "guaranteed" this, but they never get it. They are falling far short not only of earning the so-called "fair return" upon investment made prior to five years ago, but also upon investment since made and still being made.

Undoubtedly if this new investment had not been made such large reductions of operating expenses would not have been effected, and the return earned, both in total amount and in percentage upon total investment, would have been smaller than it has been. But while the operating results justify the railway managements, the return earned does not justify the policy of regulation which has been followed. How much longer can railway managers be expected to rely upon the assurance of the government regulating authorities that upon capital invested in pursuance of a policy of honest, efficient and economical management they will be allowed to earn 5-¾ per cent, if they are to continue to be prevented from earning this much even upon capital invested since the assurance was solemnly given?

It may be said that the return the railways are being allowed to earn is sufficient to attract capital. If that is true then what justification can there be, as a matter of public policy for letting other industries earn returns upon investment relatively far greater than those of the railways? If the policy being followed in the regulation of railways is justifiable and in the public interest, it would be difficult to justify the profits being earned in many industries which owe their great prosperity largely to the kind of service the railways are rendering them.

Should Gangs Be Smaller?

ONE stumbling block to increased effectiveness and economy of section work is encountered when efforts are made to introduce labor-saving equipment. Because there are so many gangs and each gang is compelled to do so many different kinds of work, the purchase of enough units of any one type of equipment for a complete installation can rarely be justified because of the remote possibility that the equipment will be employed a sufficient length of time each year to earn its annual carrying charge. Some railroads have endeavored to overcome this obstacle by assigning such equipment as a pneumatic tamper to two adjoining sections with the idea that it can be kept in use through an arrangement mutually satisfactory to the two foremen. But this plan has its limitations, with the result that some maintenance officers have proposed longer sections, and larger gangs, as discussed in an editorial appearing in the issue of January 12.

On the other hand, the officers of one western road are now considering the practicability of meeting this problem by reducing the size of the section gangs. Under this plan the section would be subjected to substantially no change in length, but the gang would be reduced to a mere skeleton organization, whose duty would be restricted to track walking, inspection, policing and other minor items of track work. The men thus released from the sections, would be assembled in a roadmasters' maintenance gang, equipped with an adequate complement of labor-saving tools and machines to do all of the major items of section work on a production basis. It is suggested that such work as renewing ties, mowing weeds, cleaning ditches, highway crossing maintenance and ballast dressing, could be performed by such a gang more effectively and with a much more efficient use of labor-saving equipment than it is now carried on by section gangs. Such a gang would also provide a mobile force available for such emergency work as washouts, derailments, etc.

This plan has not yet passed the speculative stage, but

the fact that it is being advocated and is receiving the serious consideration of the management of one road, is further evidence that railway officers are keenly alive to the limitations of the prevailing section-gang organization and are looking for something better.

Holding Up the Railways

THE USE of threats or promises to divert freight traffic to or from railways for the purpose of influencing what they shall buy and from whom they shall buy it has increased so much that it is becoming more and more of a menace to the observance of sound business principles in making railway purchases. About one-third of the operating expenses incurred by the railways are due to the use of equipment, materials and fuel that they buy from other concerns. A much larger proportion of their capital expenditures are made for equipment and materials. Their total purchases of all kinds approximate $2,000,000,000 a year. It is plain, therefore, that any influence which seriously interferes with railway purchases being determined by the relationship between the quality of the things offered for sale and the prices that must be paid for them must, in the long run, have serious adverse effects upon both their capital costs and their operating expenses.

In the "bad old days" the big shippers used the power their traffic gave them to extort large rebates from the railways. There followed years of scandals, indictments, fines and inimical regulation of railways. The big shippers got the rebates, and then helped punish the railways for giving them.

There is little or no difference in principle between the former practice of rebating and the present practice of using traffic to influence railway purchases. The purpose is the same—to gain the big shipper an unfair advantage over his smaller competitor. Its tendency, is to drive the small competitor out of business, even though he is prepared to supply the railways with as good or better goods at as low or lower prices as his big competitor. Will the use of this modern method of extorting unfair advantages from the railways grow until it will have to be ended by investigations, scandals, legislation, indictments, fines and even prison sentences, as was rebating?

The practice of trading traffic for purchases, and purchases for traffic, has long existed, and until within recent years was virtually innocuous. It was not unnatural that a railway should ask for traffic from a concern from which it was making purchases, or that a concern which was giving a railway traffic and also making railway equipment or supplies should use its traffic as an argument for buying from it. In those days, however, the practice of using traffic to influence purchases was in its infancy. It is now a lusty giant, and apparently will soon be attempting to dictate the entire purchasing policy of the railroads.

The *Railway Age* already has referred to some of the methods employed and their results. The danger in the situation is principally due to the activities of certain large interests which are not chiefly engaged in manufacturing for railways, but which have found that the large amount of traffic they control gives them a marked advantage in selling to the railways. For example, there is a certain device the use of which by railways had almost ceased because their mechanical and purchasing officers believed its merits were much too small in proportion to the price that had to be paid for it. The ownership of this device was acquired by men occupying important positions in an industry which never had manufactured for the railway market. They then began to demand that different railways should buy this device under threat of having a large amount of traffic withdrawn from them if they did not buy it, and promise of having a large amount of traffic given to them if they did buy it. It is quite remarkable how the use of this device by some railways has increased since the traffic manager of a certain large manufacturing company that sells nothing to railways became its chief promoter.

The railways maintain traffic departments to get traffic. They maintain purchasing departments to make purchases. Neither should dictate to the other how it should perform its function. The railways as a whole have nothing to gain—in the long run no individual railway can gain anything—by allowing purchases to be largely influenced by traffic considerations. A shipper who will divert traffic to a railway to reward it for buying from his company, or some other company in which he is interested, will divert it from that railway to a competing railway for the same purpose. The effects upon the morale and efficiency of the technical and purchasing departments of the railways of allowing their recommendations to be overruled by traffic considerations, must, however, in the long run, be very bad.

The progress that has been made in improving all the various kinds of equipment and devices used by railways has been mainly due to the policy usually followed heretofore of buying from those concerns, large or small, which have been prepared to supply the best goods at relatively the lowest price. Obviously, the more weight is given to traffic considerations in making purchases the less weight must be given to the merits and prices of devices and materials, and the stronger will be the tendency to destroy initiative and arrest progress in the improvement of railway equipment and materials. The tendency also will be to build up monopolies for the railways to deal with.

Is it possible to arrest this tendency of purchases to be determined more and more by traffic considerations? It might be arrested by co-operation between railway managements, but this would be impossible to bring about without one or more railways taking the lead, and they would fear to do so because of the danger that they would be blacklisted by big shippers who are benefiting by the misuse now being made of the power of traffic. Railway officers detested rebating, but all railways gave rebates because it seemed to be a competitive necessity. Many railways are yielding more and more to the traffic argument for the same reason.

And yet, it is becoming evident that either traffic will become the dominant consideration in railway purchase, or it will have to cease to be a consideration at all. Is it the only remedy for the condition that is developing investigation and action by government authorities? Everybody who is familiar with past railway history ought to know that any abuse that develops in the railroad industry must be stopped by voluntary action or it will sooner or later became the subject of governmental investigation and action.

SENATOR COPELAND, of New York, has introduced in the Senate a resolution calling on the Secretary of War and the Secretary of the Navy to transmit to the Senate a list of fatalities in the aviation services of the Army and Navy during the past five years, the causes for each accident, and "what, if anything, is needed in the way of legislation or appropriation to make safe and efficient this important arm of the naval and military service."

How Much Depreciation Should be Charged Against Track Maintained Like This?

Depreciation as a Factor in Railway Valuation*

A history of the study of this important subject by the Bureau of Valuation of the Interstate Commerce Commission

By Edwin F. Wendt†
Consulting Engineer, Washington, D. C.

THE American railroad is substantially 100 years old. Courts, commissions, economists, lawyers, accountants and engineers gave very little consideration to the question of depreciation in valuation previous to 1900, and the decisions of commissions and courts indicate great confusion of ideas regarding this problem. When the Valuation Act was passed on March 1, 1913, practical railroad engineers never discussed depreciation, except in the way of repairs, renewals and replacements. Theoretical depreciation cannot be replaced by railroad maintenance engineers, and naturally they would not be interested in this subject. When the mandatory accounting regulations became effective July 1, 1907, theoretical depreciation was of little interest to accountants because the American railroad at that time was about 75 years old, and the thing called theoretical depreciation had already taken place in the development and establishment of the railroad as a transportation machine. It is a fair statement that when the Valuation Act was passed in 1913, there was no clear understanding of the decisions of the federal courts on the subject of theoretical depreciation, and it is equally fair to say that the subject of depreciation is probably the most important question now being considered in connection with the valuation of railroads and other common carrier properties.

The Engineering Board, Bureau of Valuation, Interstate Commerce Commission, was organized May 1, 1913, at Washington, D. C. The board included William D. Pence, engineer of the Railroad Commission of Wisconsin; R. A. Thompson, engineer of the California Board of Railroad Commissioners; John S. Worley, consulting engineer, Kansas City, Mo.; Howard M. Jones, consulting engineer, Nashville, Tenn., and Edwin F. Wendt, assistant engineer in charge of maintenance and construction work, Pittsburgh & Lake Erie (New York Central Lines), Pittsburgh, Pa., who was also at that time president of the American Railway Engineering Association. The board held 283 meetings during its existence from May 1, 1913, to October 31, 1921, and issued 368 memoranda containing reports and recommendations.

The matter of depreciation was first considered at the 171st meeting of the board, held in Chicago, Ill., on September 23, 1914, at which the following resolution was adopted:

"RESOLVED: That, for the first roads inventoried, in establishing tentative depreciation figures, consideration shall be given to the following:

(1) The evidences and preliminary conclusions regarding condition of the property, as recorded in the field notes of the inventory survey;
(2) Statistical studies;
(3) Field inspections of a general character."

Memorandum No. 185 of the Engineering Board, entitled "Second Tentative Draft of Instructions for Field Work of Roadway and Track Department" was submitted to Director Prouty the same day. The letter of transmittal stated that: "Attention is particularly

* Abstracted from Bulletin No. 310, issued by the American Railway Engineering Association.

† Mr. Wendt was a member of the Engineering Board, Bureau of Valuation, Interstate Commerce Commission, from its organization in 1913 until its dissolution in 1921.

called to paragraph 23 which relates to the notes which shall be made by the assistant field engineer on the condition of property. The proposed revised instruction requires a full statement of facts of condition, but does not make mandatory a final summation in the field of the facts in terms of percentage.

These instructions, known as "Paragraph 23," were subsequently printed, and the final draft was approved and issued on September 25, 1916, over the signature of C. A. Prouty, director. "Paragraph 23. Condition of Property," contains the following instructions:

"The assistant field engineer shall make notes on the condition of all property which it is his duty to inventory. The notes shall generally be made in accordance with the following outline:

a. *Age.*

Ascertain, where practicable, year of construction, installation, or purchase of the property, and whether at that date the property was new or secondhand. If used prior to its present service, give such facts as may be obtained as to length and nature of service elsewhere. State source of data.

b. *Wear and decay*

Record such facts as to wear and decay as may be practicable from field observations.

c. *Maintenance*

Record any fact in the matter of maintenance which may bear upon the service life of the property. State in all cases the fact and its effect. If, for example, the rail joints are not properly kept up so that the rail breaks down more quickly than it otherwise would, or the reverse, this should be noted, and so with other things. Where extensive or unusual repairs are needed to put the property in serviceable condition, such facts should be noted in detail.

d. *Probable service life*

Record any local conditions which may operate to shorten or lengthen the service life of the property as compared with the average service life of similar property elsewhere. Record any evidence which may be ascertained in the field as to the inadequacy or obsolescence of the property. Where any definite field evidence can be ascertained as to the probable remaining service life of units of property, note shall be made of same."

Similar instructions were issued for the field work of the bridge, building, signal, mechanical, electrical, telegraph and telephone branches. Director Prouty, in Memorandum No. 122, addressed to the Engineering Board on October 13, 1914, acknowledged the receipt of Board Memorandum No. 185, and made the following comment: "You have, in my opinion, made a very great improvement over your previous instructions in the matter of depreciation."

The next record of the board of any consideration of the depreciation question was on June 1, 1915, in these words: "Upon motion, Mr. Thompson was appointed a committee to prepare a memorandum to the director on the subject of depreciation."

Memorandum on Depreciation

On June 4, 1915, Memorandum to the Director No. 226, "Depreciation of Road and Equipment Property," was passed upon first reading, discussed and referred back to the committee. This memorandum was passed upon final reading and transmitted to the Director on June 5, 1915. The subject had been under consideration since May 24, 1915, on which day Director Prouty stated orally that he desired the board to consider the question of depreciation. At the meeting of the board on June 9, 1915; "Memorandum to the Director No. 235, Depreciation During Construction Period," was passed upon the third reading, and the chairman was instructed to transmit a copy to the director. This memorandum contained the following recommendation:

It is a fact that some depreciation of materials accrues during the construction period. This is a matter of some importance in connection with such items as timber bridges and culverts, ties, rails and fastenings, and should be taken into account when estimating Cost of Reproduction New.

The Board recommends that consideration shall be given to the depreciation which accrues during the construction period when determining cost of reproduction new, and that it shall be confined to those items of property above mentioned.

On June 14, 1915, Director Prouty issued Memorandum to the Engineering Board No. 228, as follows: "In your memorandum No. 235 you state that in the opinion of the Engineering Board depreciation during construction should be considered. To avoid any misapprehension, let me say that no account should be taken by you until further instructed of such form of depreciation." The record shows that no further action on this recommendation was taken. The board endorsed an important, fundamental principle which is applicable, not only to timber, ties and rails, but to practically all units of physical property.

Director Prouty on July 30, 1915, addressed Memorandum No. 244 to the Engineering Board, from which the following is quoted:

"The commission has added Mr. Maltbie to the Advisory Board, and that board, now consisting of Mr. Staples, Dr. Bemis, and Dr. Maltbie, has been in session for the last two weeks. Dr. Bemis and Dr. Maltbie are not satisfied with the way in which the facts upon which depreciation is determined are observed and stated. If the observation is correct, the statement in their opinion is not. After conference with them and at their suggestion, I have decided to ask all districts to report upon the pricing sheet the following facts:

(a) Age in years up to date of inventory;
(b) Total life in years;
(c) Scrap value if any;
(d) Salvage value if any.

"Dr. Bemis and Dr. Maltbie are also agreed that we should determine and state upon the pricing sheet deferred maintenance as a thing by itself in determining depreciation. I have never given this matter sufficient consideration to form or express an opinion, but inasmuch as your board had never undertaken to define deferred maintenance, it seemed to me that it might result in confusion if you were to attempt to deal with this matter in advance of a thorough discussion by the Engineering Board."

Memorandum No. 226 As Revised

Board Memorandum No. 226 was passed on final reading on June 5, and delivered to Director Prouty on June 7, 1915. This memorandum, for some reason not shown in the record, was revised on October 30, 1915, and passed on second and final reading by the board on November 3, 1915. Two days later the minutes of the board show that:

"The Director requested the Board to condense Memorandum No. 226, subject, 'Depreciation' as revised October 30, 1915. This work was completed and a copy of the memorandum will appear in the minutes of November 6, after being typewritten and reviewed."

The minutes of November 6 show that Memorandum No. 226, as revised November 6, 1915, was passed on final reading. This memorandum is printed in full in 75 I. C. C. 183-186 inclusive. The board minutes of November 4, 1915, contain a copy of Director Prouty's letter of November 3, 1915, as follows:

"FOR INFORMATION:

"I suggest for consideration the following rule to be applied in case of Account 16, Station and Office Buildings.

"Buildings shall be depreciated on the basis of the ratio of remaining service life to total service life. The normal life of frame structures shall be taken to be 50 yr. and of masonry structures 100 yr., and these figures shall not be departed from unless investigation of the records of the carrier or an actual inspection in the field or the two combined, warrant such departure. In no case shall the remaining service life be taken at more than the above periods.

"My understanding of the actual working of such a rule would be this: If the engineer determines from an examination of the records of the carrier under valuation that frame structures upon the line of that carrier will probably last more than the 50 yr., he could, if depreciating a building one year old, give it to a future life of 50 yr., making a total life of 51 yr. of which one year had passed. If the building were

10 yr. old, he might give it a future life of 50 yr., making a total life of 60 yr. If upon the other hand, he found that frame structures upon that carrier had gone out in less than 50 yr., say 40 yr., he would, at the end of the first year, give to this building a life of 39 yr., making the total service life 40 yr., of which one year had elapsed. If the building were 10 yr. old, the future service life would be 30 yr., of which 10 yr. had elapsed.

An actual investigation of the building might modify the total service life from the very outset. A sound and substantial structure will, in the nature of things, probably last longer than a flimsy structure. I should hardly suppose that tool houses and section houses would last anything like 50 yr. The records of the carrier might show that such structures only lasted upon the average 25 yr., and, if so, that life should be used.

As soon as substantial renewals of parts began it would be necessary to consider the effect of these renewals upon total life, and this to my mind is the most difficult part of the problem and that part to which the above rule does not furnish a very satisfactory guide. I believe that something in the nature of a weighted average of the most essential parts or by trades gives a more correct depreciated value than can any attempt to estimate life, but I am willing to concede that point if my associates in this work believe that it should be done.

The above is only a suggestion."

It is interesting to note that the director, in the last sentence of his letter, expressed an opinion that the attempt to estimate life of physical units would not result in a correct depreciated value. The director at that time was disturbed by reason of the large amount of depreciation which had been measured by the field parties, and he was endeavoring to formulate a rule or method which would give a less amount of depreciation and a more correct depreciated cost value. The Engineering Board incorporated the general rule or method announced by the Director in Memorandum No. 226 (as revised November 6, 1915).

Following the receipt of Board Memorandum No. 226 (as revised November 6, 1915), Director Prouty issued Memorandum No. 290 to the Engineering Board on November 15, 1915, as follows:

Attached is copy of Memorandum No. 226 as revised by your Board November 5, 1915, with two slight modifications by me. This memorandum, while differing in the manner of statement from the original No. 226, and while applying a normal service life in place of a maximum service life, is the same in principle as the original memorandum under which you have been working. From now until further notice you will proceed to apply No. 226 as shown in the attached copy.

Your instructions in the past have been not to apply the method stated in this memorandum to the depreciation of locomotives, but in the future you will depreciate locomotives as well as other property under the terms of this memorandum.

It is probable that some changes may later be made in the rules laid down by this memorandum, but I do not believe that those changes are likely to be of much significance. It is quite likely that Engineering, Account No. 1, will be divided up into different parts, a portion to be depreciated with the property to which it attaches and which is itself depreciated, but the rule in its present form is identical with that adopted by the committee appointed by the commission to deal with preliminary reports, and I have therefore decided to allow it to stand until it is known exactly what the form of the modification may be. This, of course, is not germane to the general conduct of your work.

Comparison of Original Memorandum No. 226 With Revision

In order to show clearly the essential differences between Memorandum No. 226 prepared by the board on June 5, 1915, and the same memorandum as revised November 6, 1915, a comparison of the general rules may be made in the following tabulation:

June 5, 1915	November 6, 1915
SUBJECT: Depreciation of Road and Equipment Property.	SUBJECT: Depreciation of Road and Equipment Property.
The Board is of the opinion that the principles contained in the following definitions should govern in determining the depreciation of property used for common carrier purposes:	The Board is of the opinion that the principles contained in the following definitions should govern in determining the depreciation of physical property used for common carrier purposes:
1. Depreciation is the lessening in worth of physical property due to use or other causes.	1. Depreciation is the lessening in worth of physical property due to use or other causes.
2. Labor depreciates with the items of property of which it is a part.	2. Labor depreciates with the items of property of which it is a part.
3. Service condition per cent is the ratio between remaining capacity for service and total capacity for service in the present use.	3. Service condition per cent is the ratio between remaining capacity for service and total capacity for service in each cycle of use.
4. Depreciation shall be determined when practicable by using as a guide mortality statistics applied on a straight line basis, modified by observation when conditions warrant.	4. Depreciation shall be determined by a consideration of observations of actual conditions of the property, and mortality statistics of similar property in like use applied where practicable on the straight line basis.
5. Salvage is the value of remaining capacity for service for carrier purposes other than that for which the item of property was originally used.	5. Salvage is the net value which an article possessed for carrier purposes other than that for which the article was originally used.
6. Scrap is the value which an item of property possesses after its service for carrier purposes has been exhausted.	6. Scrap is the net market value which an article possesses after its service for carrier purposes has been exhausted.
7. None.	7. Normal life shall be the estimated average total service life under ordinary conditions.
	When depreciating property under the several accounts, the following general rules shall apply:
	(a) Ordinarily, service condition per cent shall be the ratio between the remaining service life and the total service life. When the depreciation of an item of property is based upon the weighted average of the parts, the service condition of each part shall be determined by this ratio.
	(b) When a normal life for a particular item of property has been prescribed for use in determining depreciation, that life must not be departed from unless an investigation of the records of the carrier or actual inspection in the field, or the two combined, warrant such departure. In no case shall a remaining service life of an item of property be taken at more than the prescribed normal life.
	(c) When no normal life is prescribed, the total service life and remaining service life shall be determined from observation of actual conditions and the examination of records and data from reliable sources.
	(d) Salvage and scrap will be allowed in cases where such values actually exist. Whether allowance is made in a given case for salvage or scrap shall be left to the discretion of the Member of the Engineering

Board. If an allowance is made, this fact shall in all cases, be stated upon the pricing sheet, even though at the time the amount of the allowance cannot be given.

(4) The service condition per cent as stated in the field record by the field man shall be subject to revision and final fixing by the member of the Engineering Board or his staff subordinates. The service condition per cent fixed in the field is assumed to be simply the statement of a fact."

Difficulty in Applying Rules

The field parties of the Bureau of Valuation were confronted with a difficult problem in the application of the rules contained in No. 226, particularly in the determination of the normal service life of granite masonry in New England. The writer after an inspection of masonry on the Boston & Maine in company with Warrick R. Edwards, Senior Structural Engineer, issued instructions to Frank Rhea, district engineer, on September 20, 1915, which, among other things, contained the following: "Furthermore, I wish you would instruct Mr. Edwards that, where the field enginer is unable to forecast the date of the 'death' of the structure, he should note, under the head of Probable Service Life, 'Unlimited.' This term 'Unlimited' is well known in valuation literature, and if the field engineer is satisfied that he cannot estimate the probable remaining service life, he should simply say 'Unlimited.'" The field notes were taken accordingly.

Different interpretations have been placed on what is commonly called "Rule No. 226." There is nothing strange about this because depreciation has been a "bone of contention" for 100 years since the construction of the first railroad. The interpretation of "Rule No. 226" should be made in the light of correct theory and proper practice.

The writer testified in the Clover Leaf valuation case, Valuation Docket No. 83, that where a normal life of 50 years is assigned to frame buildings, and the inspector finds by observation and investigation that, by reason of maintenance and improvements, the condition of the building on valuation date is such that its probable remaining service life is 50 years, and the age of the building is found to be 49 years, 364 days, the condition per cent of the building would be substantially 100. It would be an error to add together the age of the building and its theoretical probable remaining service life, and determine its value by the relation of its age, which is 50, to a combination of normal service life, plus probable remaining service life, which in this case would be 100. The computation would result in a condition per cent of 50 whereas the inspector found the building to be in the best possible condition by reason of maintenance, renewal and improvement. This is an erroneous application of "Rule No. 226." The proper way to proceed is to set up a standard normal life for each plant unit, and compute conditions per cent by ascertaining the relation of probable remaining service life to normal service life.

It will be observed that paragraph 7 of "Rule No. 226" as revised November 6, 1915, did not appear in the rule originally drafted on June 5, 1915, and Director Prouty, as well as others, thought that the addition of this paragraph would result in the ascertainment of a lower total amount of depreciation, but such was not the case. The application of either rule resulted in a condition per cent of substantially 80 for the average established railroad. It is estimated that a proper application of the rule would increase the condition per cent of the average going railroad, at least five per cent, and probably more.

"Rule No. 226" was adopted November 6, 1915, and the board, on April 25, 1916, made certain interpretations of the rule, the most significant of which is embodied in Board Memorandum No. 295 submitted to Director Prouty. Paragraph 2 of said Memorandum reads:

Where ballast is new or is normally maintained in first-class condition, it shall be regarded as having a condition of 100 per cent. When ballast is not new or when it is not normally maintained, consideration shall be given to present conditions and to past annual renewals and depreciation made in accordance therewith.

Director Prouty on May 10, 1916, issued Memorandum No. 399 approving the recommendation of the board. It thus appears that the board approved the principle that, where ballast is normally maintained in first-class condition, it shall be regarded as being in a 100 per cent condition.

Director Prouty on April 26, 1916, addressed Memorandum No. 390 to the board. The first two paragraphs only follow:

In order that there may be no misunderstanding, one matter should be called to the attention of the Engineering Board with respect to the depreciation of equipment.

The carriers have been advised that if their representative agrees with ours upon the condition per cent of cars and equipment, that agreement will be binding upon neither party; that the commission will not be bound by the report of its inspector and that it will not insist that the carrier is bound by the report of its (inspector).

The Engineering Board made no recommendations concerning the depreciation of General Expenditures, but on December 14, 1916, Director Prouty issued Memorandum No. 484 to the Board, reading as follows:

No uniform rule has ever been adopted at to the depreciation of general expenditures. In some of the reports which have been received such depreciation has been made while in others it has not. It has finally been decided to adopt in all districts for the present the following rule:

General expenditures will be depreciated according to the depreciation in the accounts upon which they are computed. All general expenditures are now reckoned as a per cent upon some set of accounts. For example, general expenditures, not including interest during construction, are 1½ per cent upon the road accounts exclusive of land. This item of general expenditures would be depreciated in proportion to the depreciation of the same road accounts, and so with interest during construction, which is reckoned partly upon the road accounts and partly upon the equipment accounts.

It is significant that the records of the board are almost silent on the subject of Depreciation from April, 1916, to October, 1921, when the board was dissolved. The statistical data required by "Rule 226" had not been assembled, and other matters constantly claimed the attention of the board so that under stress of circumstances, "Rule 226" was applied somewhat as a formula.

Definition of Depreciation

The board defined depreciation as follows: "Depreciation is the lessening in worth of physical property, due to use or other causes." This definition was based on the general instructions of the commission issued in various classifications of accounts. The commission had recently formulated uniform systems of accounts for telephone companies and telegraph and cable companies in accordance with amendments to the Interstate Commerce Act. These were the latest classifications of the commission, and represented its most recent decisions on many fundamental points. It is interest-

ing to compare the paragraphs in these two classifications which relate to depreciation. The Uniform System of Accounts for Telephone Companies, first issue, effective January 1, 1913, pages 66 and 67, contains "Instructions Pertaining to Operating Expense Accounts." Section 23, page 67, of the Commission's printed classification contains a definition of depreciation, and a rule for its determination, as follows:

23. *Depreciation of plant and equipment*

Telephone companies should include in operating expenses depreciation charges for the purpose of creating proper and adequate reserves to cover the expenses of depreciation currently accruing in the tangible fixed capital. By *expense of depreciation* is meant:

(a) The losses suffered through the current lessening in value of tangible property from wear and tear (not covered by current repairs).

(b) Obsolescence or inadequacy resulting from age, physical change, or supersession by reason of new inventions and discoveries, changes in popular demand, or public requirements, and

(c) Losses suffered through destruction of property by extraordinary casualties.

The amount charged as expense of depreciation should be based upon rules determined by the accounting company. Such rules may be derived from a consideration of the company's history and experience. Companies should be prepared to furnish the commission, upon demand, the rules and a sworn statement of the facts, expert opinions, and estimates upon which they are based.

The estimate for depreciation of physical property should take into account—

(a) The gradual deterioration and ultimate retirement of units of property which may be satisfactorily individualized, such as buildings, machines, valuable instruments, etc., to the end that by the time such units of property go out of service there shall have been accumulated a reserve equal to the original money cost of such property plus expenses incident to retirement less the value of any salvage.

(b) The depreciation accruing in property which can not be readily individualized, such as pole lines, wires, cables, or other continuous structures, where expenditures for repairs or replacements of individual parts ordinarily are not actually made until the later years of the life in service of such property, and when made may, therefore, be classed as extraordinary repairs.

The rate of depreciation should be fixed so as to distribute, as nearly as may be, evenly throughout the life of the depreciating property the burden of repairs and the cost of capital consumed in operations during a given month or year, and should be based upon the average life of the units comprised in the respective classes of property.

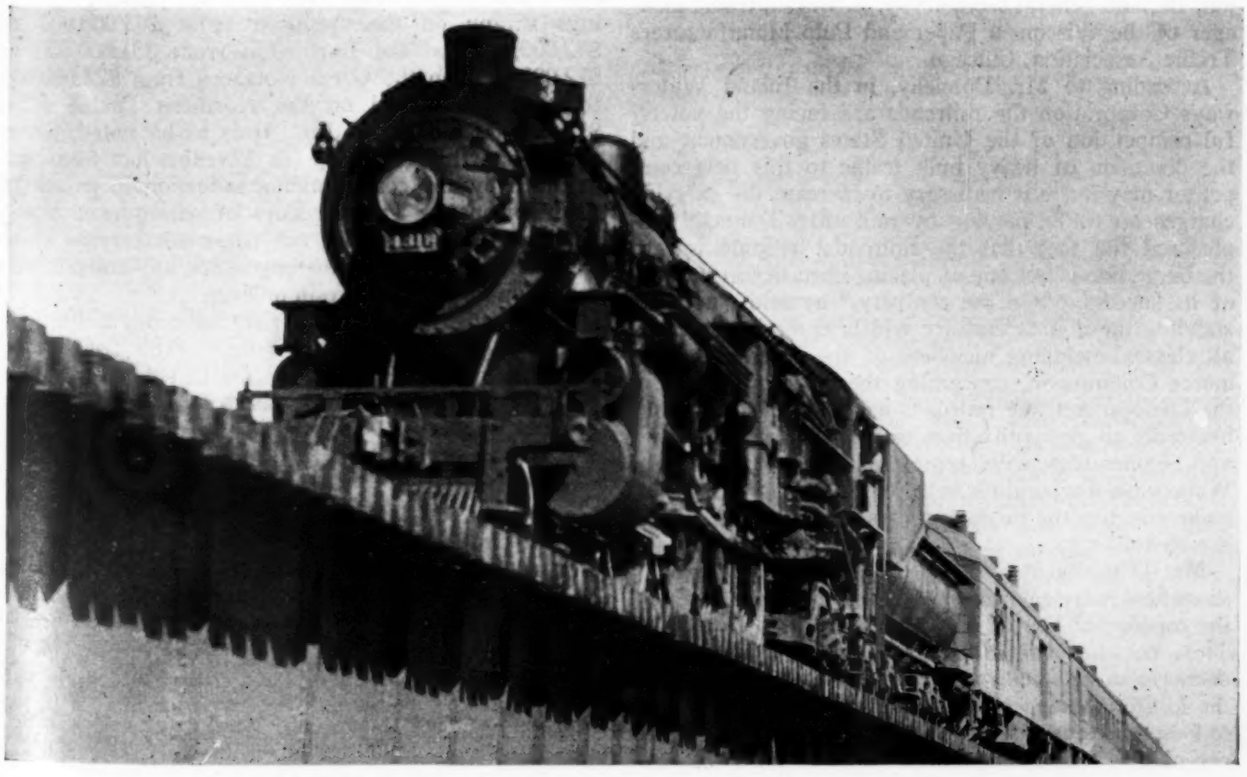
The amount estimated to cover the expense of depreciation of fixed capital, should be charged monthly to account No. 608, 'Depreciation of Plant and Equipment' (or to the appropriate clearing account or accounts), and concurrently credited to account No. 102, 'Reserve for Accrued Depreciation—Cr.'

Account No. 413, 'Realized Depreciation not Covered by Reserves,' is provided in the corporate surplus or deficit account for charges for realized depreciation on tangible fixed capital retired when such depreciation occurred prior to the establishment of account No. 102, 'Reverse for Accrued Depreciation—Cr.,' or has not been provided for by credits to that account.

"The Uniform System of Accounts for Telegraph and Cable Companies," first issue, became effective January 1, 1914, one year after the effective date of the Classification of Telephone Accounts. The "General Instructions" are printed on pages 9-16 inclusive of the pamphlet containing the first issue, and the definition of depreciation and rule for its determination are contained in paragraph 21, page 16, being almost identical with those for the telephone companies.

The Engineer Board of the Bureau of Valuation was governed by the latest instructions of the commission contained in the Telephone and Telegraph Classifications of Accounts, and the definition of depreciation and the rule contained in Board Memorandum No. 226 were the definition and rule heretofore determined by the commission for accounting purposes, which the board regarded as a general instruction for the guidance of the Bureau of Valuation as well as the Bureau of Accounts. Board Rule 226 was an attempt to apply the General Instructions contained in the Commission's Accounting Classifications.

* * * *



The Southern Pacific's "Sunset Limited" Crossing the Rio Grande at El Paso, Texas

Charles Donnelly Discusses Shrinking Revenues

FAVORABLE business conditions in the Midwest during the first quarter of 1929 were forecast at the fifth annual meeting of the Midwest Shippers Advisory Board, held at Chicago on January 3. Charles Donnelly, president of the Northern Pacific, who was the principal speaker, discussed the decline in passenger revenues due to automobile competition and described the possible loss in freight revenues due to competition with the Inland Waterways Corporation. While the forecasts indicated that the rail movement of 29 selected commodities will show a reduction of approximately 41,000 cars, or 3.3 per cent, in the first three months of 1929 as compared with the corresponding period a year ago, this reduction is more than accounted for in a single industry—coal—and is due to unusual conditions existing in that industry in the opening months of 1928. It was estimated that the rail movement of coal in Midwest territory will show a drop of 66,000 cars in the first three months of 1929, as compared with the first quarter of 1928. This drop is due principally to the fact that coal movement in March, 1928, was abnormally high, because of the uncertainty then prevailing as to the labor situation in the Midwest coal fields after April 1, 1928, the date on which wage agreements expired. If this coal traffic is eliminated from the totals, the general level of business activity in Midwest territory in the coming three months is expected to be approximately 4 per cent higher than in the corresponding quarter a year ago.

The following officers were elected for the coming year: general chairman, George A. Blair, general traffic manager of Wilson & Company, Chicago; alternate general chairman, Lawrence Farlow, secretary of the Farmers Grain Dealers Assn. of Illinois, Bloomington, Ill., and general secretary, J. E. Bryan, traffic manager of the Wisconsin Paper and Pulp Manufacturers Traffic Association, Chicago.

According to Mr. Donnelly, in the Inland Waterways Corporation the railroads are facing the powerful competition of the United States government and the diversion of heavy bulk traffic to this new competitor may make it necessary to increase the carrying charges on traffic moving by rail. Mr. Donnelly emphasized the fact that the railroads' attitude toward the barge line is not one of placing obstacles in the way of its success. "On the contrary," he said, "notwithstanding the doubts that are widely entertained among all classes, including members of the Interstate Commerce Commission, concerning the constitutionality of the Denison Act, the railroads have gone ahead wholeheartedly to give full effect to that attitude, and they are co-operating with representatives of the Inland Waterways Corporation in an effort to agree upon and make effective the through routes and joint rates which it calls for."

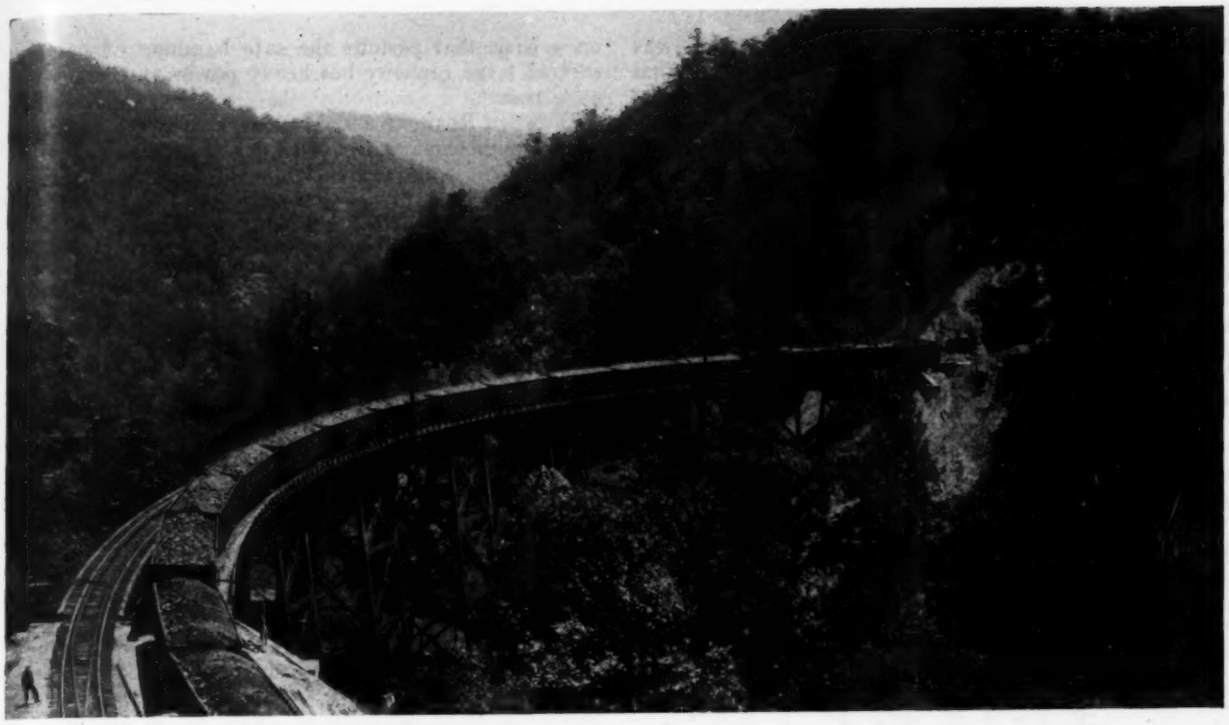
Mr. Donnelly stressed the significant dwindling of short-haul passenger business to the automobiles, and the consequent loss of revenue to the Class I railroads. This, he said, has taken place without any marked decrease in passenger train expenses. As a result of the loss in passenger revenues, railroads are compelled to look more and more for their support to their freight revenues. The Inland Waterways Corporation now threatens to bring about a reduction in railroad freight revenues, he said.

"Perhaps the most striking single fact or development of recent years in rail transportation is the steady and uninterrupted shrinkage of passenger earnings," Mr. Donnelly said. "There is nothing mysterious about the cause of this shrinkage; every one knows that the automobile is responsible for it. Every one knows that the genius represented in that great industry has now brought that vehicle to a stage of perfection where, taken in connection with our already splendid and constantly improving system of highways, it offers a convenient and easily available and, in good weather, a most enjoyable means of passenger transportation, with which, for short or moderate distances, the railroad train finds it increasingly hard to compete. No man who owns an automobile—and the number of men who own one or more is multiplying rapidly—now thinks of taking a train to cover a distance of one hundred miles or less; and the result is that railroad men now recognize not only that the short-haul passenger business has alreadv dwindled, but that we are approaching a time when it will have pretty much disappeared. It is true that in the great congested centers of population, such as New York and Chicago, the very multitude of privately-owned automobiles has hindered the effective use of them, and the commutation business is being driven back to the trains, but that business is seldom, if ever, profitable.

"The effect of all this on passenger earnings is very striking. In 1920, the passenger revenue of the Class I railroads of the country was $1,289,000,000; in 1927 it was only $976,000,000; and while complete figures for 1928 have not yet been made up, the figures for the first ten months showed a further shrinkage of eight per cent below the previous year. These decreases are even more striking in the case of lines serving the sparsely settled territory of the West. During the seven-year period from 1920 to 1927, passenger earnings shrank on the Atchison from $63,000,000 to $42,000,000; on the Burlington from $31,000,000 to $22,000,000; on the Great Northern from $22,000,000 to $13,000,000; and on the Northern Pacific from $21,000,000 to $12,000,000. It is to be noted, moreover, that this shrinkage in revenue has been unattended by any corresponding reduction in passenger train expenses. The necessity of affording that dependable day in and day out passenger service which the public demands makes impossible any considerable reduction of passenger train mileage.

"As a consequence, rail carriers are compelled to look for their support more and more to their freight revenue; and it is idle to disguise the fact that the advent as a freight carrier of heavy, bulk commodities of the Inland Waterways Corporation, sponsored and sustained as that corporation is by the United States government, threatens to bring about a reduction in railroad freight revenues."

RADIO EQUIPMENT is being used on a switching locomotive by the American Rolling Mill Company at Ashland, Ky. The equipment is similar to that employed on main line freight trains, but in this case one unit is installed in the yard dispatcher's office and the other on the locomotive working in the yard around the plant. Two-way communication is provided, enabling the dispatcher to issue an order and receive a confirming reply.



A Six-Thousand Ton Train on a 2.07 Grade

How an Operating Man Views the Virginian Electrification

Results of a study made by an observer from another railroad

By F. L. Johnson*
Assistant to Vice-President, Chicago, Burlington & Quincy, Chicago

NUMEROUS articles have been written and reports made covering the electrified operations of the Virginian, almost wholly from the standpoint of power plant, sub-station, overhead construction, and electric locomotives. It is felt that the above features have been quite fully covered; hence, this paper will give consideration to the benefits of electrification from a transportation standpoint.

Operating Benefits of Electrification

Some of the benefits obtained by the Virginian by the electrification of its line from Mullens, W. Va., to Roanoke, Va., are:

1. A marked increase in train load from Mullens to Norfolk.
2. Elimination of "turn arounds" between Mullens and Princeton.
3. Saving of one hour or more on each eastbound train between Mullens and Clarks Gap, thus increasing its capacity to handle business.
4. Being able to move from 12 to 15 trains eastbound out of Mullens each 24 hours with an increased tonnage per train, as against 7 or 8 trains each 24 hours prior to electrification.
5. Being able to handle what is now normal business between Mullens and Merrimac, without congestion or delay (there is but little question that, with the business now being handled, there would have been congestion in this territory under steam operation. It is a well-known fact that congestion causes an increase in operating costs out of proportion to the increase in business.)
6. Decreased cost of maintenance of equipment—reduced accidents and derailments.
7. Elimination of pusher out of Princeton and discontinuance of a nine-mile helper district from Whitethorne to Merrimac, with marked reduction in road overtime.

While the cost to electrify the section between Mullens and Roanoke was approximately $15,000,000, if electrification had not been undertaken it would have been necessary to spend large sums for additional heavy motive power and for additional second track in a territory where construction costs are high, because of physical conditions necessitating heavy fills, deep rock cuts, and tunneling through mountains.

The results of electrification as a whole, are best understood by a glance at the following figures:

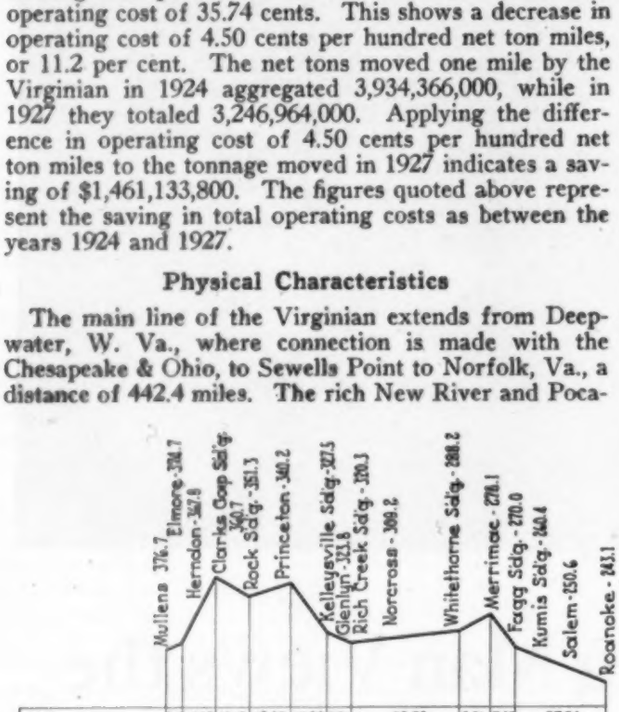
In 1924 (the last full year previous to electrification)

* From a paper presented before the National Electric Light Association, based on Mr. Johnson's survey of the Virginian, made on the ground.

the Virginian's cost of conducting transportation was 16.94 cents per hundred net ton-miles, with a total operating cost of 40.24 cents, while in 1927 (the first full year subsequent to electrification) the cost of conducting transportation was 13.63 cents, with a total operating cost of 35.74 cents. This shows a decrease in operating cost of 4.50 cents per hundred net ton miles, or 11.2 per cent. The net tons moved one mile by the Virginian in 1924 aggregated 3,934,366,000, while in 1927 they totaled 3,246,964,000. Applying the difference in operating cost of 4.50 cents per hundred net ton miles to the tonnage moved in 1927 indicates a saving of $1,461,133,800. The figures quoted above represent the saving in total operating costs as between the years 1924 and 1927.

Physical Characteristics

The main line of the Virginian extends from Deepwater, W. Va., where connection is made with the Chesapeake & Ohio, to Sewells Point to Norfolk, Va., a distance of 442.4 miles. The rich New River and Pocahontas coal fields lie near the western terminus and are served by the main line and numerous branch lines between Deepwater and Mullens, W. Va. The coal from nearly all of these mines is collected in Elmore Yard, just east of Mullens, and is handled from this point to tidewater at Norfolk. The line is single-track except from Mullens to Matoaka, 22 miles, which is double-track and includes the maximum grades, and except from Carolina Jct., Va., near Norfolk, to Sewalls Point, Va., which is also double-track.



Miles		3.06	10.32	10.05	12.97	10.90	7.21	32.72	9.51	7.43	27.56		
Elevation		1427.03	1528.42	2535.99	2232.61	2458.16	1674.13	1534.96	1700.65	1966.37	1445.86		926.0
Compensated grade per cent	East	+.531	+1.979	-.396	+.402	-1.259	-.340	+.168	+.583	-1.252	-.313		
	West	2.28	-1.681	+.710	-.198	+1.395	+.391	-.024	+.475	+1.400	+.401		
Maximum grade per cent		1.21	2.11	1.25	0.60	1.50	0.808	0.20	0.60	1.5	0.9		
Average curve degree		3.79	3.73	3.93	2.55	1.70	0.64	1.80	1.35	1.85	1.10		
Maximum curve degree		12°	12°	12°	8°	8°-10'	3°	8°	8°	8°	8°		
Miles from Nor...		76.73	71.67	61.36	51.33	38.40	32.49	32.029	28.759	27.810	27.067		24.311

Condensed Profile of the Electrified Section

The track is laid with 100-lb. and 130-lb. rail and is rock ballasted, bridges and everything connected with maintenance of way being constructed and maintained on a basis that permits the safe handling of not only cars of large capacity but heavy power and heavy tonnage trains.

Between Roanoke and Mullens, curves are numerous, with a number as sharp as 12 deg.

No high speeds are attained, for the following reasons:

1. The traffic conditions do not demand them.
2. It would not be possible to handle safely, trains of the length and tonnage handled on the Virginian at such speeds as many railroads handling a diversified business find it necessary to do.
3. The electric locomotives in service have but two constant speeds, 14.2 and 28.4 miles per hour, and the maximum safe speed at which they can operate is 30 miles per hour.

Traffic Problem Unique

The conditions as to class of traffic handled and its destinations are, to a great extent, peculiar to the Virginian, and perhaps have no counterpart in this country, in that the tonnage eastbound consists very largely of coal originating at mines located on this its western subdivision north and west of Mullens and moving to tidewater at Norfolk, while the westbound movement is largely empty coal cars.

The fact that such a large percentage of the eastbound traffic consists of coal moving to tidewater makes it, from a transportation standpoint, not only easy but desirable, as an economical operation, to handle it in the largest units possible with safe operation; hence, the Virginian has used very high capacity equipment for the handling of coal, having several hundred coal cars with a capacity of 70 tons and something over 2,000 with a capacity of 120 tons, none of its coal carrying equipment having less than 55 tons' capacity.

The use of such equipment has naturally called for special design as to trucks, draft rigging, drawbars, and air brakes. The cars of 120-tons capacity are not interchanged with connections but are used exclusively between the mines and tidewater. The same is true, to a very large extent, of cars of 70 tons capacity.

Coal from mines on the main line between Deepwater and Mullens and on the various branches of the New River division is handled from the mines to Elmore yard (Mullens) by steam locomotives, and is consolidated at Elmore for main line movement to tidewater. During the year 1924 (which was the full year immediately preceding the beginning of the electrification of the section from Mullens to Roanoke) the Virginian handled 7,440,832 net tons of coal, while during the year 1927 (the first full year after the completion of electrification) it handled 11,825,101 net tons of coal.

The Line's Capacity

In the movement of eastbound traffic from Elmore yard to Clarks Gap, Mile Post 361.5 (summit of the Allegheny mountains), a distance of approximately fourteen miles, the maximum grade is 2.07 per cent and the average grade for the entire distance is 1.85 per cent, while descending to the east the maximum grade from Mile Post 361.5 to Mile Post 352 is 1.25 per cent, with an average over the entire distance of 0.575 per cent. From Mile Post 352 to Mile Post 338.6, there is an ascending grade of a maximum of 0.6 per cent, while from Mile Post 338.6 there is a maximum descending grade to Mile Post 328 of 1.5 per cent, with an average of 1.35 per cent, and from Mile Post 325.4 to Mile Post 321.4 there is a maximum descending grade of 0.80 per cent, with an average of 0.689 per cent. Otherwise, the maximum grade against eastbound traffic is 0.2 per cent.

The capacity of the Virginian to move eastbound

business, because of the origin of its tonnage, is practically limited to that which can be moved from Elmore to Clarks Gap. Before electrification, it required one 2-8-8-2 locomotive, with tractive effort of 101,300 lb. and two 2-10-10-2 locomotives, with tractive effort of 147,200 lb. each, as helpers, to move a train of 5,500 tons from Elmore to Clarks Gap, and the time in transit was from two hours to, in some instances, five hours. From Clarks Gap to Princeton one 2-8-8-2 locomotive handled 5,500 tons. At Princeton the train was filled to 10,000 tons, was given a helper engine from Princeton to Oney Gap tunnel, a distance of two miles, and another helper engine from Whitethorne to Merrimac, a distance of nine miles. From Roanoke to Victoria a Mikado type 2-8-2 locomotive with tractive effort of 60,800 lb. handled 7,000 tons, while from Victoria to Norfolk the same type locomotive handled 7,700 tons.

Owing to the heavy tonnage handled and the different classes of equipment used, it was necessary to classify the cars according to capacity, placing the 120-ton capacity cars on the head end, the 70-ton capacity cars next, and the lighter capacity cars on the rear. This situation has not been changed by electrification.

Increasing the Capacity

The first move to increase the capacity of the line was the purchase of heavier motive power, later followed by the construction of a second track from Mullens to Mataoka, a distance of 22.02 miles, and still later by the electrification of the Mullens-Roanoke subdivision. With the present electric locomotives, the Virginian is handling trains of 6,000 tons from Elmore yard to Clarks Gap, with one electric road locomotive and one electric helper locomotive. At Clarks Gap, trains are filled to 9,000 tons and are handled by one electric road locomotive from that point to Roanoke, a distance of 118 miles.

Since electrification, the 2-10-10-2 engines formerly used as helpers between Elmore and Clarks Gap have been assigned to the Roanoke-Victoria subdivision and are handling 12,000 gross tons, while the 2-8-8-2 USRA engines have been assigned to the Victoria-Norfolk subdivision and handle 11,500 gross tons.

Between Norfolk and Roanoke two local passenger trains are operated each way daily and one local freight train each way daily except Sunday; between Roanoke and Princeton there are operated one local passenger train in each direction daily and one local freight train in each direction daily except Sunday; between Princeton and Elmore, a distance of 35 miles, three passenger trains are operated each way daily and one local freight train each way daily except Sunday. Thus it will be seen that the through freight traffic has little interference. It is the operating practice to put passenger trains, local freight trains, and westbound through freight trains on the passing tracks at meeting points.

Personal Observations

On a trip which I recently made over the Virginian, the train left Elmore yard at 8:06 a. m. with 6,000 tons, with an electric road locomotive and a helper, and arrived at Clarks Gap, a distance of about 14 miles, at 9:03 a. m. Here the train was filled to 9,000 tons and it then left Clarks Gap at 9:40 a. m., making the run from Clarks Gap to Roanoke, a distance of 118 miles, without a stop and arriving at Roanoke at 4:08 p. m. It is the usual practice for eastbound freight trains to stop at Whitethorne for inspection, but in this instance this stop was not made, as, between Clarks Gap and Whitethorne, we had met both the passenger train and the local freight train, whose crews evidently inspected the train as we passed and reported it in satisfactory condition.

The following morning we left Roanoke at 8:10 a. m., with 113 cars, 12,077 gross tons, with a 2-10-10-2 engine, with tractive effort of 147,200 lb. and arrived at Victoria, 123.4 miles, at 6:30 p. m. Stops were made at Goodview, Huddleston, Phoenix and Abilene for water, and at Seneca for coal and water, a total of five stops. One of the remarkable features in connection with the handling of this train was the absence of jars in stopping and starting. As a matter of fact,

The Locomotive Yard at Mullens, W. Va.

in spotting for coal and water, automatic air was not used, but only the straight air on the engine, and, with one exception, namely, Seneca, the spotting for water was done without cutting the engine from the train. Between Roanoke and Victoria, we met one passenger train, one local freight train, and one westbound through freight train, consisting largely of empty coal cars, but in all cases these trains were on the passing track. Fortunately for the operation of the through freight trains, there is little local business, and the local freight trains are able to keep out of the way of through freight trains. As an example of this, the eastbound local freight train left Roanoke about one hour and fifteen minutes ahead of the through freight train and went into Victoria yard ahead of it.

Constant Speed Locomotives

Due to the constant speed of the electric locomotives, it is said that when a train leaves Clarks Gap the train dispatcher can tell exactly what time it will pass through various telegraph stations, and its arrival at Roanoke within five or ten minutes, barring delays due to hot boxes or drawbar trouble. As previously stated, these locomotives have two constant speeds, viz., 14.2 or 28.4 miles per hour. They will occasionally exceed this speed slightly when regenerating on the down grade, but 29 to 30 miles per hour is the maximum speed which they attain. In the movement from Clarks Gap to Roanoke, the air was not applied at any point, except in approaching Roanoke yard and bringing the train to a stop after it had been pulled into the clear, the train being held on descending grades by regeneration. Hence, there is little brake shoe wear, little trouble due to brake beams down, and little trouble from overheated wheels. This situation arises from two causes: first, the brakes are seldom used, and second, owing to their operating condition, brakes and brake rigging are maintained at a high standard at all times.

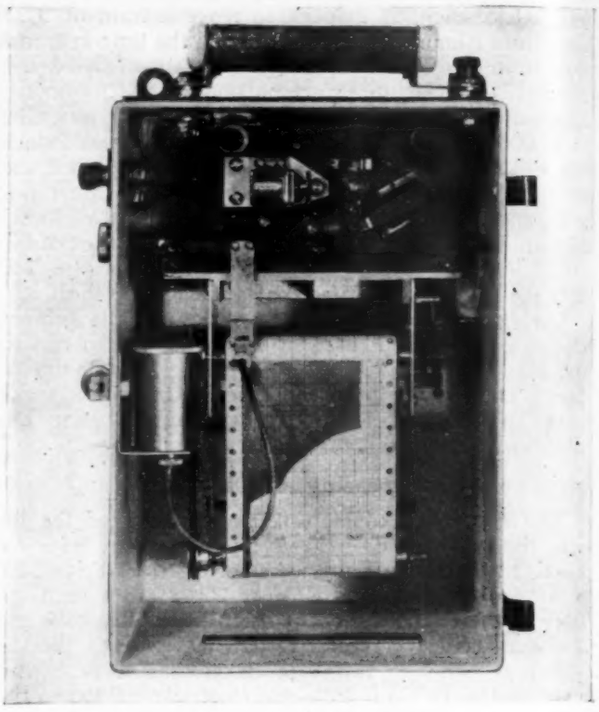
Conclusions

In my opinion, there are few, if any, railroads with normal conditions as to class, direction and density of traffic that would be warranted in electrification on a scale comparable with that which the Virginian has accomplished. I question if any railroad having normal grades and operating conditions and handling a general business, such as is handled by the average railroad, in all kinds and classes of equipment, would be warranted in incurring the expenditure made by the Virginian. It was apparently economical for the Virginian, in view of its special operating conditions, class and trend of traffic, to do so.

Graphic Speed Recorder and Mileage Counter

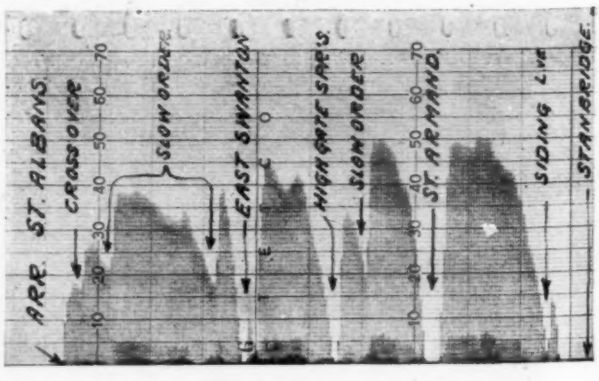
AN instrument which plots a speed curve and registers total miles traveled, has been developed by the Electric Tachometer Corporation, Philadelphia, Pa. This machine integrates the distance traveled during each 15 second-interval and plots the result on a sheet which is direct reading in miles per hour. A counter showing total miles is provided. It is positive in operation, having the same accuracy as the clock which controls it, and it includes the convenience of an electric transmission.

A contact making device is driven from the car or locomotive axle by belt, flexible shaft or gears. This device causes a motor in the instrument to rotate at a speed proportional to the axle speed. Each rotation of the motor moves the pen across the meter chart a cer-



Speed Recording Instrument with Cover Removed—Separate Auxiliary Devices Including Axle-Driven Contactor and Clock Are Not Shown

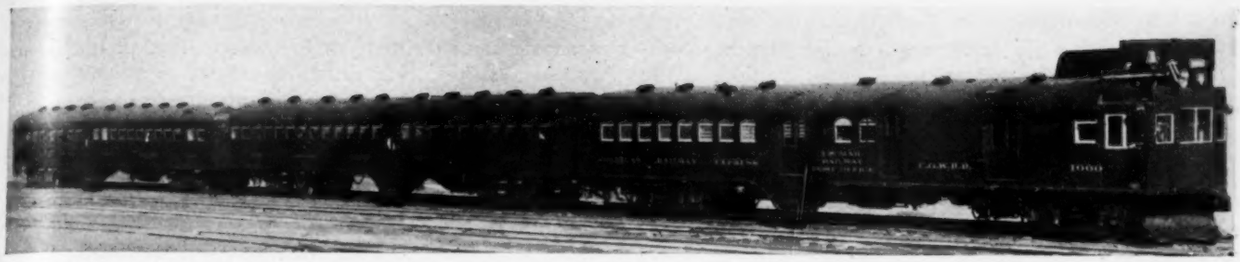
tain distance against the force of a restraining spring. At the end of a 15-second interval, a clock trips the pen and allows it to return to zero on the chart. At the same time, the chart is advanced magnetically and the cycle repeated. This results in a series of parallel lines



Specimen of Graphic Speed Recorder Chart

across the chart, their length being proportional to the speed. Their ends form a speed curve. As the chart is advanced on a time basis, intervals of one-quarter minute can be checked accurately.

The mileage counter provides a quick and accurate check on the chart. The nature of the mechanism is such that the chart must be as accurate as the counter. Comparing the count with mile posts on the wayside, will, therefore, check the chart regardless of fluctuation in speed between posts.

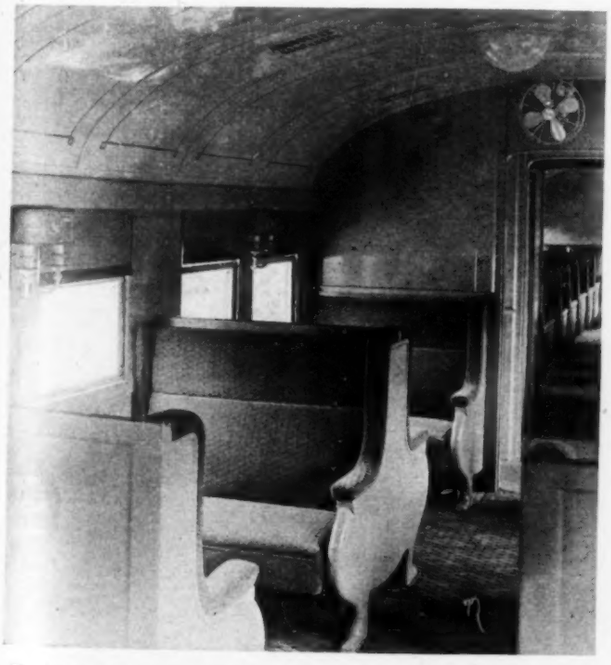


De Luxe Three-Car Gas-Electric Train Built at the Oelwein (Iowa) Shops of the Chicago Great Western

De Luxe Motor Train Exhibited

Chicago Great Western builds the "Blue Bird," a unique three-car motor train, at Oelwein shops

FOLLOWING its exhibition at Minneapolis, St. Paul and several other points in Minnesota early in January, a unique three-car gas-electric train, known as the "Blue Bird", has been placed in regular passenger-train service on the Chicago Great Western between Minneapolis, St. Paul, Redwing and Rochester, Minn. The feature of this train suggesting its name is the distinctive coloring of all three cars, the exteriors of which are painted entirely in blue except for the running gear and the cooling system on the motor-car roof. All striping and lettering is in gold leaf. The cars are notable for their artistic interior decorations and the provision of practically every modern convenience, refinement and innovation developed to please the most fastidious traveler. While the cars follow the lines of the old McKeen gasoline rail cars and in fact utilize the original underframes from three units of that equipment, the cars have been completely rebuilt and re-equipped outside and in. The work of design and construction was carried out at the Chicago Great Western shops, Oelwein, Iowa.



Probably the First Pullman Section To Be Provided in a Gas-Electric Train

300-hp. Gas-Electric Plant Installed

The three cars of the new motor train include a combined motor, baggage and mail car, a comfortable day coach and a parlor-observation-club car. The cars are 66 ft. 7 in. long, except the motor car, which has been shortened to 64 ft. The motor car weighs about 60 tons and the two trailers 33 tons and 35 tons respectively. The power plant, located in the forward part of the motor car in a separate compartment, is one of the latest developments of the Electro-Motive Company, Cleveland, Ohio. It consists of a heavy duty, railway type, six-cylinder engine, with 8-in. by 10-in. cylinders, governed to develop 300 hp. at 900 r.p.m., and arranged with a special carburetor to burn either gasoline or petroleum distillate. The engine is directly connected to an electric generator which supplies current to two traction motors mounted on the forward truck. The electrical equipment forming the transmission, and furnished in this instance by the Westinghouse Electric & Mfg. Corp. to specifications of the Electro-Motive Company, is extremely rugged and especially designed to transmit the full power of this particular engine.

A substantial partition separates the engine room from the 15-ft. standard railway mail compartment which is equipped with all facilities to meet United States mail service specifications.

At the rear of the mail compartment is the baggage room, measuring 30 ft. 2½ in. long by 9 ft. 4½ in. wide. The window sash are equipped with frosted glass and protected on the inside with iron strips to avoid the possibility of broken glass in the handling of baggage or express. In this compartment is located full equipment for a baggage car and also an individual heating plant.

Each car is heated with an individual Arco hot water system, designed and regulated to assure an even, comfortable temperature in all weathers. The motor-car, as well as the balance of the train is illuminated electrically by a Kohler automatic lighting plant. This is a self-contained unit located in the baggage room and arranged to start as soon as a switch is turned on in any part of the train.

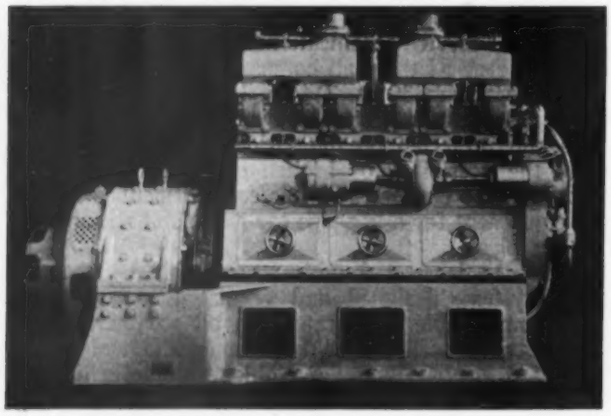
The coach is provided with large, deep seats; wide aisles covered with sound-deadening battleship linoleum; spacious windows and tasteful decorations.

The seating capacity is 30 head in the smoking compartment and 44 in the main passenger section in the rear, making a total of 74.

Parlor-Observation-Club Car

The Blue Bird parlor-observation-club car is designed to provide the same quality of luxurious travel comfort which is found on the best equipped steam trains. The rounded end of the parlor-observation section, provided with large plate glass windows, forms in effect an attractive solarium equipped with high and low backed reed chairs, upholstered in soft old-rose and shimmering blue mohair. A deep-yielding Wilton carpet of blue-gray and artistic wall-bracket lamps harmonize with the general decorative scheme. Smoking stands and electric cigar lighters give the added touch of convenience found more often in a club than in a public conveyance.

Interior View of the Beautifully-Fitted Parlor-Observation End



Gas Engine and Direct-Connected Electric Generator

In the club section of the lounge car, the comfortable seats are arranged in sets of four, ready for card games on the portable tables or the business gossip over the cigars. Close by, is the well-stocked buffet in charge of a trained porter, who will serve luncheon, tea, soft drinks, refreshments, cigars, cigarettes, playing-cards, etc., on request. This service is available at any hour.

The parlor-observation-club car also carries two complete Pullman sections which can be made up with one lower berth in each for those desiring such accommodations. This feature is designed to meet the needs of those who are traveling with persons requiring complete rest and relaxation.

The chair section of the lounge car carries through the same ideas of luxury common to the other sections. The bucket-seats are roomy and deep. Carpets, seats decorations, appointments, all repeat the luxury characteristic of the rest of the car. The seating capacity is as follows: forward section, 28; club section, 8; pullman section, 8; chair section, 13; making a total of 57.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended January 5 totaled 798,723 cars, an increase of 44,476 as compared with the total in the first week of 1928 and a decrease of 135,167 as compared with the corresponding week on 1927. Loading of all commodities, with the exception of coal and livestock, was larger than a year ago and an increase is shown in all district totals as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, January 5, 1929

Districts	1929	1928	1927
Eastern	177,806	167,897	209,424
Allegheny	161,316	151,760	185,637
Pocahontas	49,212	46,375	58,515
Southern	123,774	120,816	149,734
Northwestern	93,264	92,562	110,750
Central Western	123,074	113,914	140,486
Southwestern	70,277	60,923	79,344
Total Western Districts	286,615	267,399	330,580
Total All Roads	798,723	754,247	933,890
Commodities			
Grain and Grain Products	41,798	36,715	44,137
Livestock	26,914	29,058	34,248
Coal	171,623	174,977	213,335
Coke	10,726	10,035	11,518
Forest Products	45,209	44,642	61,828
Ore	8,989	7,379	9,677
Merchandise L. C. L.	201,074	199,766	239,662
Miscellaneous	292,390	251,675	319,485
January 5	798,723	754,247	933,890
December 29		667,586	680,554
December 22		897,968	829,810
December 15		964,086	868,750
December 8		984,352	877,676

The freight car surplus for the week ended December 31 averaged 386,132 cars, including 149,369 coal cars, 184,677 box cars, 27,093 stock cars and 12,491 refrigerator cars.

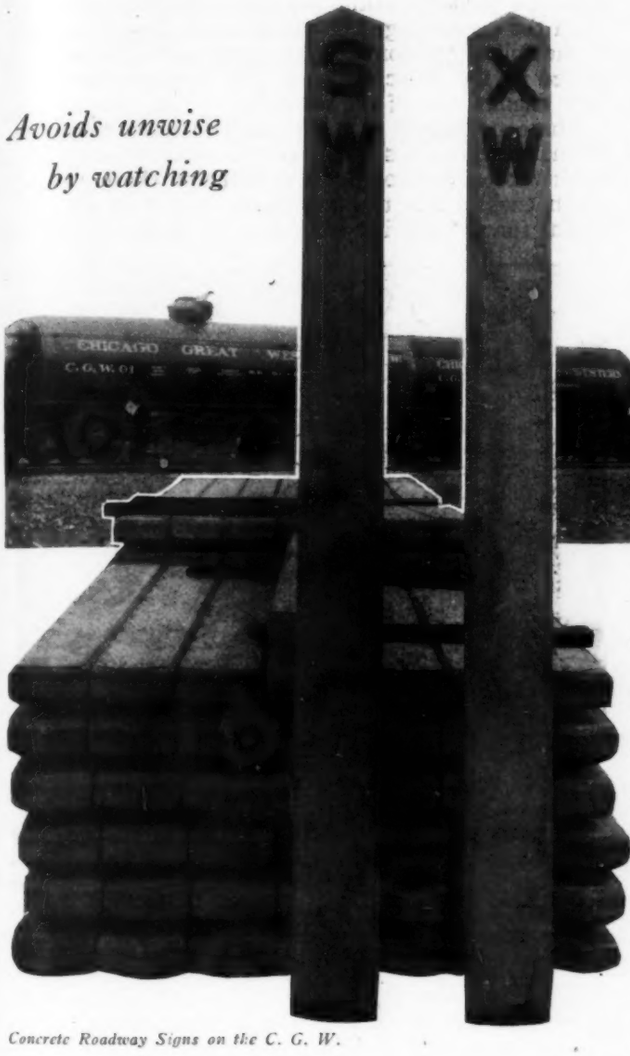
Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended January 5 totalled 46,192 cars, an increase over the previous week of 1,950 cars and a decrease from the same week last year of 5,568 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
January 5, 1929	46,192	31,007
December 29, 1928	44,242	31,562
December 22, 1928	61,976	37,328
January 7, 1928	51,760	29,122
Cumulative Totals for Canada		
January 5, 1929	46,192	31,007
January 7, 1928	51,760	29,122
January 8, 1927	57,390	30,343

Great Western Follows First Principles in Buying

Avoids unwise purchasing and keeps inventories down by watching requisitions—Consolidates orders and ships direct



Concrete Roadway Signs on the C. G. W.

Supply Cars on the C. G. W.

By A. C. Simmons

Purchasing Agent, Chicago Great Western
Chicago

THE Chicago Great Western has found that a small road can easily become too involved in its purchasing methods and that the systematic preparation, checking and approving of requisitions for materials to be purchased is one of the most effective ways of controlling material stocks and adjusting the purchase of supplies to actual current requirements. Although spending about $2,000,000 each year for materials and supplies, not counting fuel, rail, ties and special program materials, it rarely occurs that the road buys anything it doesn't need. The purchases and stores department, unlike those on a great many roads, are separate from each other and yet there is no duplication of work or expense and there is very little waste in handling commodities in their movement from shipper to ultimate consumer.

Prior to 1924, it was customary to make purchase requisitions for maintenance supplies at stated intervals during the month according to the classes of materials. Although a popular practice on many railroads today, it resulted in irregularities in the receipt of the requisitions on the Great Western, frequently in the same class of materials which would be ordered two or more times during the same month. To correct this, it was decided that one monthly requisition should be made for the entire system and that such requisitions should be received in the general offices on the first of each month. To accomplish this, each department and division was given a definite date on which its requisitions should reach the general storekeeper, through whose office, moreover, every order for material and supplies must pass.

In the maintenance of way department, the section foremen send all their requisitions for materials on a specified date each month to the roadmasters who consolidate them on the standard form for ordering maintenance of way material. After checking and revising these requisitions, they are approved and forwarded to the division engineer maintenance of way who checks them against the previous month's requisitions and against the reports of materials on hand. After making such reductions or additions as may be necessary, he approves and passes them to the division superintendent for his approval. At the time the division engineer maintenance of way checks the requisitions, one copy is separated from the others and posted in a book according to roadway sections, which gives the engineer's office a ready check on the amounts of materials requested and received each month during the year. The superintendent usually examines the requisitions in the presence of the division engineer maintenance of way so as to know the need for ordering the material

and to ascertain that the amount actually represents current requirements. The requisitions are then sent to the general storekeeper who checks them against his stock. If they cannot be filled from materials on hand, purchase requisitions are prepared. The items from

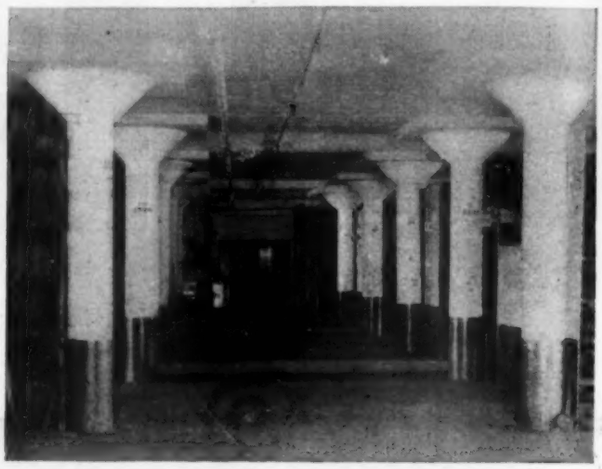
Material Handling Equipment at Oelwein

the various divisions are consolidated in these system purchase requisitions, except for repair parts of machinery, special tools, etc., which are to be shipped direct to divisional points.

Officers See All Requisitions

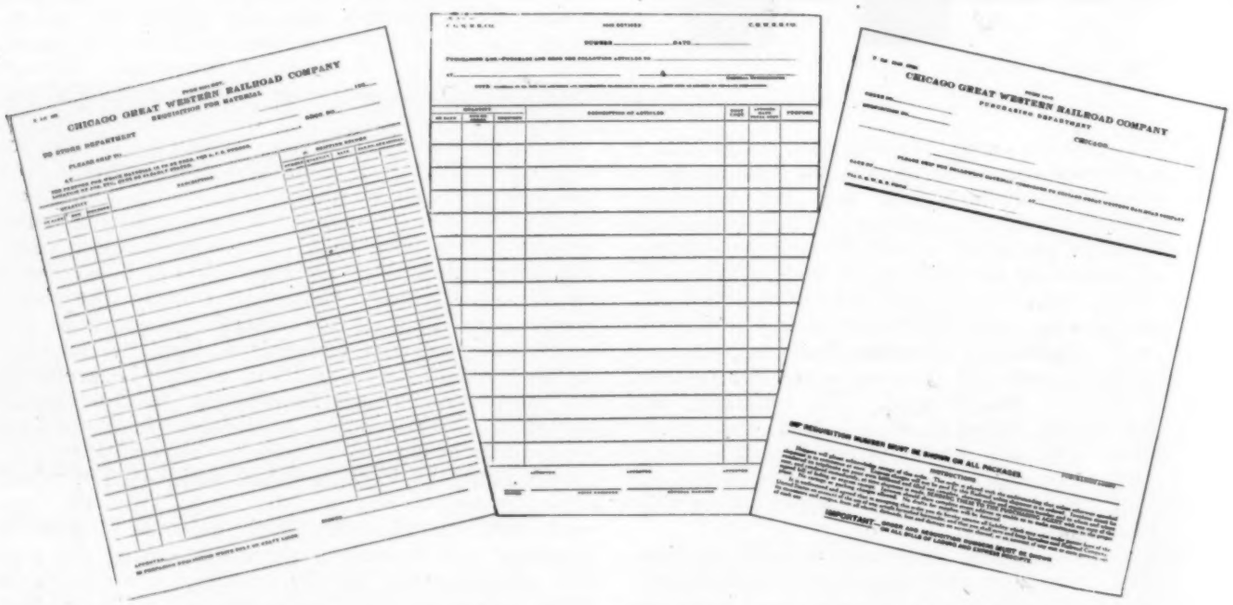
In preparing the purchase requisitions, the general storekeeper, in addition to showing the amount desired of each item, also shows the amount on hand, the amount due on previous purchase orders and the approximate cost of each item ordered. As many items as possible, moreover, are written on each order. The purchase requisitions prepared in this manner by the general storekeeper are then sent to the superintendent of motive power or the chief engineer, as the case may be, for his check and approval. These officers, in turn, forward them to the general manager where they are personally scrutinized and signed by that officer. They then go to the president, who personally sees and signs them, whereupon they are forwarded to the purchasing department for action.

The requisitions for material to be obtained by purchase are prepared in the last week of each month and reach the purchasing department by the fourth or fifth of the following month, after being examined and approved by the proper officers. To preclude this thorough examination of the requisitions from delaying the purchase operation, it is the practice when preparing purchase requisitions in the general storekeeper's office to forward carbon copies direct to the purchasing agent, which enables him to place inquiries and secure quotations for all materials without awaiting receipt of the

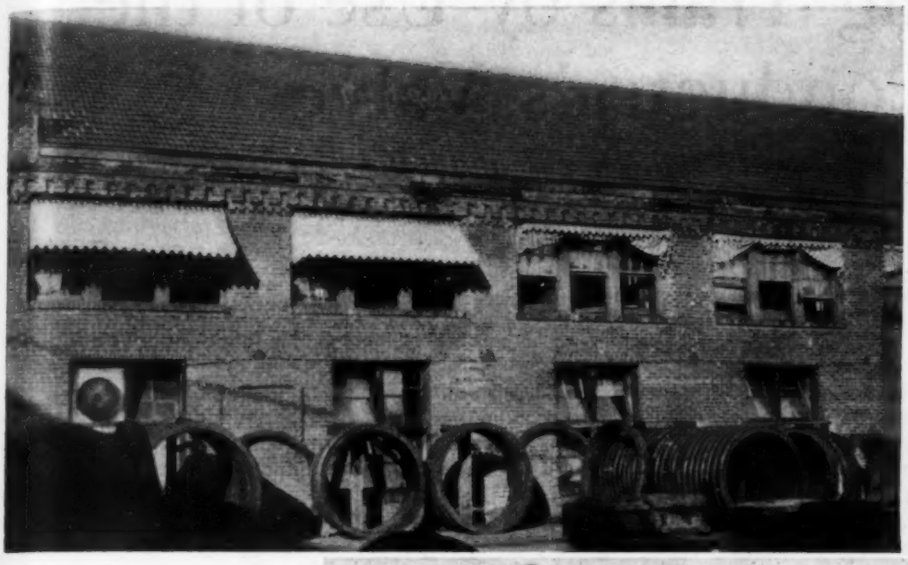


In the General Store at Oelwein

approved requisitions. It is seldom that any order is placed without first receiving competitive bids for it. Under this practice, the purchasing agent has bids and quotations on practically 75 per cent of the material to be ordered when the approved requisition reaches him, which puts him in a position to place purchase orders immediately and avoid delay.



Order on Stores for Material, Stores Order on Purchasing Agent and Purchase Order on Manufacturers Used on Great Western



eventually scrapped because of changes in standards or requirements.

By securing quotations for every purchase order and limiting the number of orders handled by consolidating the items, the purchasing department has found it unnecessary to go to the expense of keeping elaborate price lists. The general storekeeper's officer maintains a price book in connection with its accounting work, but in the purchasing department, the copy of the purchase order is now considered adequate for checking all charges,

At Oelwein, Ia., Where All Orders for Material Originate

The requisitions number in the neighborhood of 150 a month, from which about 900 purchase orders are made. These orders are all placed by the 18th of each month and in practically all cases, all ordering material is shipped before the end of the month. With the practice of checking the order book constantly to keep track of unfilled orders, the shipments of special material are almost always made within 45 days.

In distributing materials from the general storeroom, special effort is made to avoid the use of passenger trains. Supply cars or supply trains are run at stated intervals each month on each division and the material is delivered to the stations, sections, or other organizations and receipts taken thereafter. Carload shipments destined to divisions are, as far as practicable, shipped direct to destination to avoid the expense of rehandling and reshipping from the general stores department. In addition, a car is placed at the freight house in Chicago every day for the shipment to the general store at Oelwein, Iowa, of purchased material which might otherwise be delivered through transfer houses.

The inauguration of this plan of supply work and the close personal supervision given to requisitions for materials by the general officers has been largely instrumental in bringing about a most satisfactory reduction in the amount of money tied up in material stocks and has largely corrected the ordering of materials in excess of current needs, which causes large quantities of materials to be carried in stock for long periods and while files of old invoices, always at hand, are considered an adequate office record with which to compare current quotations or settle other quotations involving prices when they arise.

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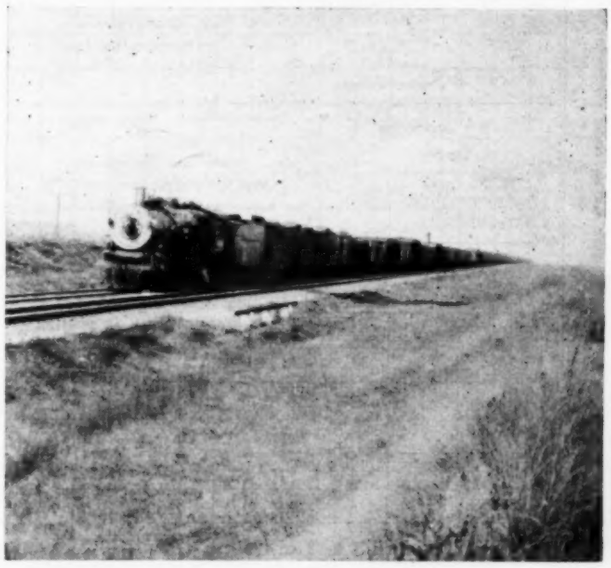


On the Great Northern

Stopping Trains by Use of the Conductor's Valve

Development of brake cylinder pressure at head of train is slower with brake valve in running position

By G. E. Terwilliger

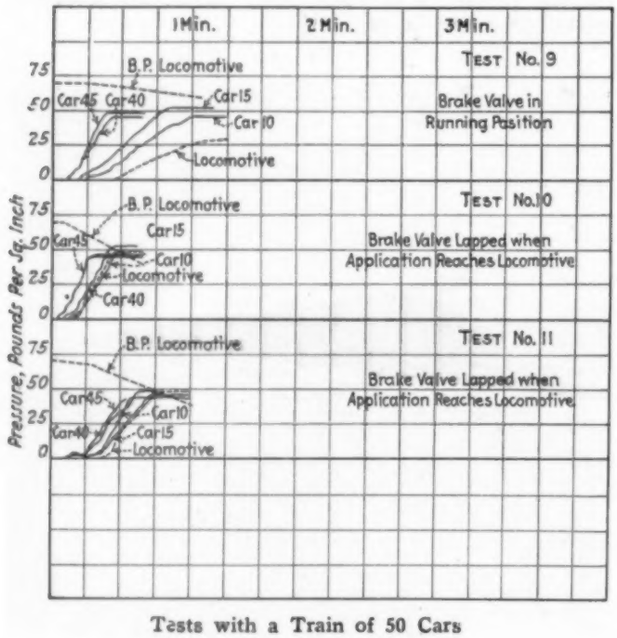
Supervisor of Auxiliary Equipment, New York, New Haven & Hartford

FOR years there has been considerable difference of opinion as to the proper manipulation and use of the conductor's valve for stopping a train. There has also been a question as to whether passenger equipment should be equipped with platform valves in addition to a conductor's valve. It is generally admitted that the platform valve has certain advantages of location, specially when cars are crowded and the occasion arises for the conductor or a trainman to stop the train. The purpose of this article is to show the results and conclusions from a number of tests made by the writer to determine what takes place when a platform or conductor's valve is opened.

It is generally agreed by operating and air brake officers that considerable caution is required on the part of the operator when trains are stopped by means of the conductor's valve, if quick action of the brakes is to be prevented. Of course, quick action should be prevented at all times, especially at critical speeds which may range from zero to fifteen or eighteen miles an hour. Although gages registering brake pressure are installed in many caboose cars, it is not advisable to assume that a certain brake-pipe reduction can be made as recorded by the gage.

Correct Manipulation of the Conductor's Valve

The correct manipulation of a conductor's valve on a long freight train is to turn the handle slowly so as to secure a gradual opening of the valve. It is important that conductors and trainmen should refrain from attempting accurate stops for such an attempt may require a quick reduction of brake-pipe pressure. Although instructions forbid such practices, there are times when attempts are made to spot a car with a hot box close to a stream or pond. The stopping of a train by use of the facilities provided in caboose cars is necessarily slow if the job is done properly.



Tests with a Train of 50 Cars

Some operating officers are of the opinion that the engineman's brake valve should be placed in lap position when the brakes are applied from an unknown cause. There are also some roads that have issued instructions which provide for placing the brake valve in emergency position. The curves, shown on the four charts, are the result of a number of tests made to determine the effect of applying brakes by means of the conductor's valve at the rear end of a train having varying amounts of brake-pipe leakage.

It will be noted in Test No. 9, that the brake-cylinder pressure varies slightly on different cars in the train. It will also be noted that during the application of brakes in this test, the brake valve was left in running position. The brake-cylinder pressure curves show a lower pressure on the locomotive and the tenth car in the train than on cars 40 and 45. This indicates that the train under these conditions, with the engineman's brake valve left in running position, was stopped with the slack stretched. The brake-pipe pressure on the locomotive was reduced very slightly, indicating that the build-up of brake-cylinder pressure is correspondingly slow.

Referring to Test No. 10, on the same chart, it will be noted that the brake-pipe pressure on the locomotive falls much more rapidly than in Test No. 9. The brake-cylinder pressure on the locomotive and tenth car rises very abruptly, and to a figure somewhat higher than on cars 40 and 45. These conditions are just the reverse of those experienced in Test No. 9. The high brake-cylinder pressure on the tenth car and locomotive indicates that the retarding force on the head end of the train is substantially greater than on the rear and is indicative of shocks that may be prohibitive.

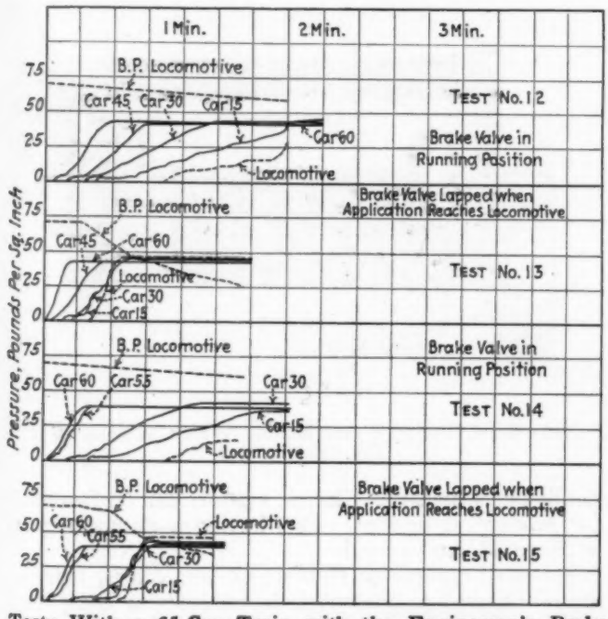
Lapping the Brake Valve

Tests 9 and 10 refer to the result of different methods of brake-valve manipulation on a train of 50 cars. Tests 12 to 15, inclusive, show the result of leaving the brake valve in running position and of lapping the brake valve when the brake application reaches the locomotive, respectively, on a 65-car train.

All that is necessary in connection with these conclusions as to what the result would be under the two

methods of brake valve manipulation, is to compare the drop in brake-pipe pressure and the rise in brake cylinder pressure in Tests 12, 13, 14 and 15. As in the case of the 50-car train, the time of development of brake cylinder pressure at the head end of the train is slow when the brake valve is left in running position but rapid when the brake valve is placed in lap position. It will also be noted that the brake-cylinder pressure on the locomotive and on cars 15 and 30, is somewhat higher when the brake valve is lapped than when it is left in running position.

One of the charts shows the same information for a 75-car train. In comparing Tests 5 and 8, with the brake valve left in running position and with the brake valve lapped when the application reached the locomotive, respectively, it will be noted that the brake-cylinder pressure on the locomotive in Test No. 5 was slow in developing and that there was a substantial brake-cylinder pressure registered on cars 65 and 70, well in advance of the start of brake-cylinder pressure on cars



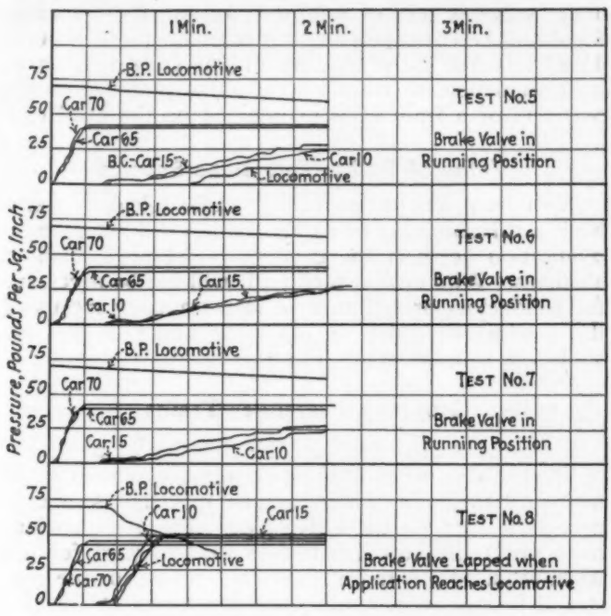
Tests With a 65-Car Train with the Engineman's Brake Valve in Running and Lap Positions, Respectively

10 and 15 and the locomotive. It will be noted that in the Test 8 the locomotive brake-cylinder pressure, as well as that on cars 10 and 15, was somewhat higher than the brake-cylinder pressures registered on cars 65 or 70. This would indicate a condition which would create prohibitive slack action. The latter would be materially increased in the event of loads on the rear and empties at the head of the train.

Tests 1, 2, 3 and 4 show a striking difference in the results obtained when opening the conductor's valve slowly and when opening it quickly. The brake cylinder pressure on the locomotive in Test No. 4, for reasons unknown, did not rise as high as in Test No. 8. Also, the conductor's valve was opened more quickly.

Test No. 4 shows that irrespective of whether the brake valve is left in running position or placed in lap position, an emergency application is always available from the rear of the train, if desired.

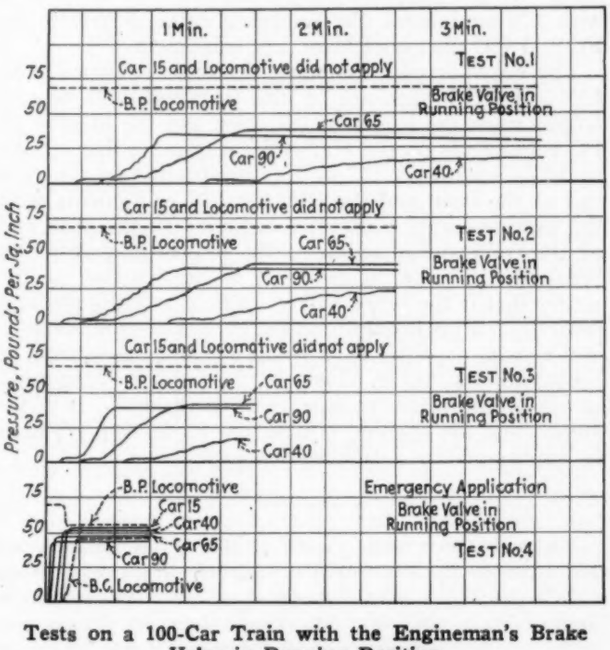
Tests 1, 2 and 3 indicate that the brakes on car 15 and the locomotive did not apply. However, with the brakes applied up to the fortieth car on a 100-car train, the locomotive would be stalled and the train stopped



Results of Tests on a 75-Car Train

in a manner which would not produce slack action in a degree that would result in prohibitive shocks.

From the foregoing, it is apparent that when the engineman's brake valve is placed in lap position when a brake application reaches the locomotive, the conditions under which the operator is stopping the train are immediately changed. When the application is started, a reduction in brake pipe pressure is made against the supply from the feed valve. To lap the brake valve when the application reaches the locomotive, cuts off the supply of air to the brake pipe. If the conditions under which the conductor or trainman is stopping the train are changed during the progress of the stop, the judgment exercised by the operator is practically annulled. Whatever increase may have developed in brake cylinder pressure on the head end of a train when the brake valve is lapped, over what it may be when the



Tests on a 100-Car Train with the Engineman's Brake Valve in Running Position

brake valve is left in running position, the retarding force will be correspondingly greater on the head end. This holds true for practically all long freight trains, as it is impossible to maintain the same pressure on the rear end of a train as is maintained on the head end.

Value of Radio Telephone Service

With train lengths increasing, radio telephone service is a valuable asset as its installation will assure communication between the conductor and engineman at all times. With such a facility, it will not be necessary for conductors or trainmen to stop trains by means of the conductor's valve or other air brake devices installed in caboose cars.

Stopping Passenger Trains

It may be well to consider the stopping of passenger equipment cars when making terminal movements. In many instances, to facilitate such movements, a connection is used on the brake pipe. These connections must ordinarily be carried from yard to yard for use when required. A more convenient device for the control of train movements in yards is what is known as a platform-pipe end valve, which is a fixture located on the end of passenger car. When cars are equipped with this device, it is obviously not necessary to carry this connection from yard to yard as is the case when cars are not thus equipped.

The stopping of trains by means of the platform pipe connection also involves the question of brake-valve manipulation. In some respects, it may be considered as of more importance than when handling freight trains. If the brake valve is placed in lap position when the brakes apply on the engine, very little time is required to deplete the brake-pipe pressure to a point where quick action of brakes results. No particular damage is done at this time, except on trains where the retarding force on the rear end is appreciably greater than that on the head of the train. The retarding force is greater on cars equipped with UC or PC equipment, and also on LN equipment with the supplementary reservoirs cut in, than on PM equipment. If the supplementary reservoirs are not cut in with LN equipment, the retarding force is greater on PC and UC than on PM or LN equipment.

The drawbar pull, assuming that cars equipped with UC and PC brakes are on the rear end, will depend largely upon the length of the train and the number of PC equipments on the rear end. Assuming that a train of 12 cars with six PC or UC equipments on the rear end of the train and six PM (or LN equipments with the supplementary reservoirs cut out) on the head end of the train, quick action of the brakes may result in breaking the train in two. It is the opinion of the writer that if the brake valve is left in running position until the train is brought to rest, the brake-pipe pressure will not be depleted to a point where quick action of brakes results. This, of course, depends on the manner in which the platform-pipe valve is opened. It is assumed that the opening is sufficient to develop gradually approximately a full service application.

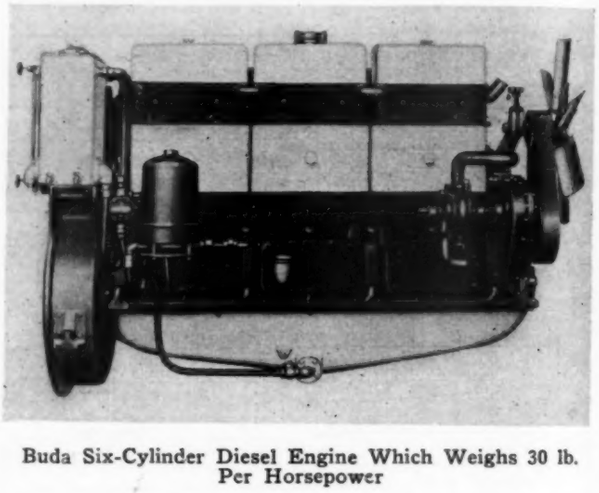
RAILROADS MAY ISSUE PASSES to the 14 district attorneys and 1 deputy in each district in Colorado, if success attends a bill which has been introduced in the state senate by Senator Ryan. Another bill, presented in the House, proposes to tighten restrictions on "drumming and soliciting" by "butchers" on passenger trains and other common carriers.

Six-Cylinder, 180-Hp. Diesel

THE Buda Company, Harvey, Ill., has placed on the market a larger model of the Buda-M.A.N. diesel engine. Like the other Diesel engines manufactured by this company, this model is closely related to the designs of the M.A.N. Company of Germany, which The Buda Company is manufacturing under license and patents.

The present model develops 180 hp. and has six cylinders, 6½ in. in diameter by 8¾ in. stroke. The actual weight of the engine with all equipment, except for the clutch is approximately 5,400 lb. or 30 lb. per horsepower. The overall length is 89 in. and the height 58 in.

This engine is designed in accordance with the airless fuel injection principle, (spray atomization). Compressed air is not used either for starting or running. The engine is started by a small air-cooled, two-cylinder gasoline engine mounted on a bracket which is cast on the flywheel housing. Electric starters can be furnished for starting, if desired. Fuel having a Baumé gravity of 26 to 38 can be used.



Buda Six-Cylinder Diesel Engine Which Weighs 30 lb. Per Horsepower

Standard equipment consists of fuel filters, lubricating oil filters, an air filter, tools and starting equipment.

With a normal operating speed of 1,000 r.p.m. and compact proportions, the engine may be used in many new fields that heretofore have been impracticable for Diesel engines. It is adaptable to the operation of electric generating units, locomotives, rail cars, compressors, and shovels.

* * *

On the Great Northern at Berthold, N. D.

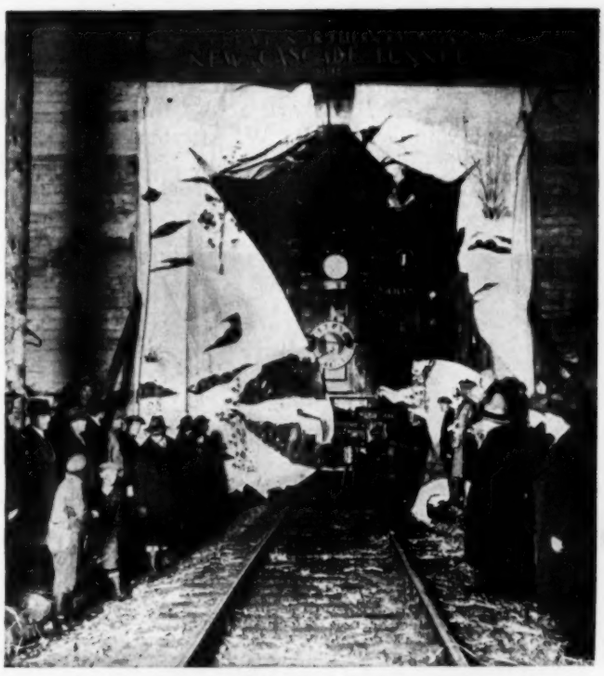
Radio Audiences Hear Opening of Cascade Tunnel

Hook-up of 38 stations and speakers in six cities create wide interest in opening of longest tunnel on continent—President-elect Hoover gives address

AN innovation in railway public relations activity which had for an audience hundreds of thousands of people throughout the United States was introduced on the night of January 12 co-incident with the opening ceremonies of the Great Northern's Cascade tunnel in the state of Washington. This innovation was a radio hook-up involving Washington, D. C., New York, Philadelphia, San Francisco and points at each end of the 7.8-mile tunnel, requiring some 43,000 miles of wire; and the whole program was broadcast from 38 National Broadcasting Company radio stations scattered throughout the country.

The new tunnel, which is the longest in America and the fifth longest in the world, was bored through the Cascade mountains at a point about 100 miles east of Seattle, Wash., from Scenic to Berne, Wash. It makes a great reduction in grades and curvature and some reduction in distance on the Great Northern's main line to the coast. Articles describing the project appeared in the *Railway Age* of November 27, 1926, and April 14, 1928. The opening of the tunnel likewise marks the extension of electric traction to 76 miles of the Great Northern's line.

C. O. Jenks, Vice-President of the Great Northern in Charge of Operation, Throwing Switch to Permit First Train to Enter the New Tunnel



Electric Locomotive, Hauling the Oriental Limited, Breaking Through the West Portal at Scenic, Wash., Where the Tunnel Opening Ceremony Took Place

President-elect Herbert C. Hoover was the principal speaker at the ceremonies, speaking to his listeners from the library of his home in Washington, D. C., several thousand miles from the actual scene of the dedication. In addition to Mr. Hoover's speech, the hook-up included addresses by Ralph Budd, president of the Great Northern, who spoke first at the east portal of the tunnel as the pioneer electric-powered train started on its journey through, and later after it emerged through the cloth covering which had been placed over the opening of the west portal at Scenic, Wash. Others who were heard over the air during the program were General W. W. Atterbury, president of the Pennsylvania, who spoke from his suite at the Bellevue Stratford hotel in Philadephia; J. B. Campbell, former chairman of the Interstate Commerce Commission, who spoke from the National Broadcasting Company's studio at Washington, D. C.; Mme. Ernestine Schumann-Heink, who sang a number of song selections from San Francisco; and George Oleson's orchestra, which was heard in musical selections from the New York studio of the broadcasting company.

The ceremony began at 6 p.m. at Berne, where special trains bearing delegations from both sides of the State of Washington met. There the president of the railway, Ralph Budd, was introduced by Graham McNamee, radio announcer for the hook-up. Following a brief program at Berne, which included the opening of a gate and addresses, the trains were consolidated and passed through the tunnel to Scenic, the west portal.

As soon as Mr. Budd's address at the eastern entrance to the tunnel was ended, the characteristic sounds of the train as it got under way were clearly heard over the radio—including several long blasts of the whistle. Then, almost instantaneously, the broadcasting was switched to New York, where the orchestra gave an imitation of the moving train. The hook-up was then transferred to Washington, where Commissioner Campbell spoke; then back to New York where the announcer told the radio audience what was transpiring. This

was followed by an instantaneous switch to San Francisco, where Mme. Schumann-Heink, entertained the listeners by singing "Land of Hope and Glory." The scene then changed back across the continent to Philadelphia and General W. W. Atterbury's voice was heard. Following his address Mme. Schumann-Heink was heard in two more song numbers. Promptly at 10 o'clock, p. m. Eastern Standard Time, President-elect

W. W. Atterbury, President of the Pennsylvania, Addressing the Radio Audience From His Hotel Suite in Philadelphia

Hoover took his stand before the microphone in Washington and made the principal address of the evening, which follows:

President-elect Hoover's Address

"To President Budd, my friends in the Cascade Mountains and of the radio audience:

"I am glad to participate in a small way in recognition of a great engineering accomplishment—the completion of the greatest tunnel upon our continent. Perhaps only engineers can appreciate the technical skill, the labor, the courage required for such an undertaking. But the opening of a great transportation tunnel is more than an engineering accomplishment. It is a contribution for all time to quickened and cheapened transportation. Through these savings it adds something to the productivity and prosperity of far-flung communities which it serves. In the end it means a mite of contribution to better living of many hundreds of thousands of people.

"Never have we witnessed a more perfect coordination of the forces of American industry than in this great job. The miners who have operated the drills, who cleared the rock and built the new tracks during these three years have established a record in construction and for their skill. Every one of them needs no recommendation in the future other than that they were on the staff of the Cascade Tunnel.

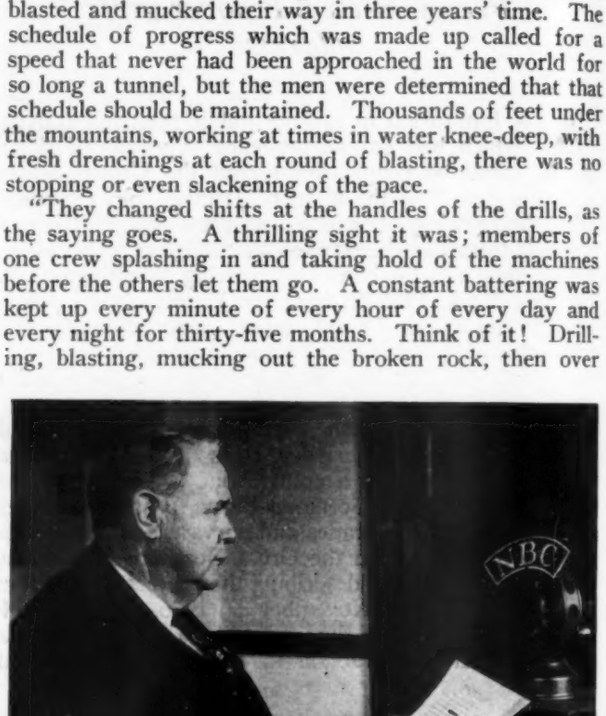
"President Budd and his fellow engineers who have designed this tunnel and carried it to successful completion have left an enduring monument to their skill and abilities. The great transportation organization which has made it possible by its courage and foresight has demonstrated again the progressive character of American industry. This accomplishment is of more moment than the progressive improvement of the Great Northern Railway. It gives every American the satisfaction of confidence in the vitality and progressiveness of our civilization. I congratulate you, Mr. Budd, your associates and Our Country."

Address of President Budd

In his address at the dedication ceremonies of the Tunnel, speaking from the Eastern portal, President Budd said:

"At the very beginning of this project, a plan of attack, complete in all its details, was carefully worked out and this plan has been executed with a courage and enthusiasm that I have never seen equaled. Through nearly eight miles of solid granite, men have drilled and blasted and mucked their way in three years' time. The schedule of progress which was made up called for a speed that never had been approached in the world for so long a tunnel, but the men were determined that that schedule should be maintained. Thousands of feet under the mountains, working at times in water knee-deep, with fresh drenchings at each round of blasting, there was no stopping or even slackening of the pace.

"They changed shifts at the handles of the drills, as the saying goes. A thrilling sight it was; members of one crew splashing in and taking hold of the machines before the others let them go. A constant battering was kept up every minute of every hour of every day and every night for thirty-five months. Think of it! Drilling, blasting, mucking out the broken rock, then over



Johnson B. Campbell, Former Chairman of the Interstate Commerce Commission, Speaking Into the Microphone at Washington, D. C.

again; eight feet gained at each round, five rounds in 24 hours, all by machinery, but machinery in the hands of enthusiastic, expert workmen. There was no letting up until the last foot of tunnel had been excavated and the entire bore lined with concrete.

"Another group equally determined was always present at the front. They dodged in when they could to do their work without delaying actual excavation; yet without them there would have been no aim or direction to the drifting, which went on at such feverish pace. They were, of course, the engineers who gave the line and grade. Contending with the many handicaps incident to the job, they nevertheless made their calculations and did their work so accurately that when they had carried the line eight miles over a mountain 3,500 feet high and back from the portals nearly four miles into the blind ends of the tunnel where the last barrier was removed,

the two lines were only nine inches apart and the levels only three inches different.

"The completed tunnel symbolizes the main idea behind the railroad career of James J. Hill, namely, the importance of economy and efficiency in railway operation. From the very beginning, his policy was to be sure of the country through which he was to build; then to strive for the lowest possible operating costs for the benefit both of the railway and the producers. This idea seems to have been as clearly in his mind in the very first days of his railroad venture as it ever was.

"Before his rails had reached Montana, he was telling Marcus Daly in Butte that he hoped, by giving low rates, to enable shippers to largely increase their business. He said: 'What we want over our low grades is a heavy tonnage and the heavier it is the lower we can make the rates.' When he talked of building railways according to his standards, people laughed at him for thinking a transcontinental line could be built without government aid and his proposed line was called 'Hill's Folly.' To-day, the folly of any other basis for railway promotion is so well recognized that we forget it ever was otherwise.

"Thirty-six years ago Hill's Folly reached Puget Sound, the golden spike being driven a short distance west of here on January 7, 1893. The Great Northern is the only transcontinental railway that has earned and paid dividends every year since that date. In 1914, when Mr. Hill made his last trip over the entire line, I was privileged to be on the train and to hear him discuss various future plans. Among them, he mentioned a tunnel such as this, and said: 'Some of you will live to see this mountain line eliminated.' It is, therefore, with the greatest satisfaction that I am now able, on behalf of the directors and stockholders of the Great Northern Railway, to dedicate this tunnel to the illustrious founder, the Empire Builder, James J. Hill."

Safety Section Recommends Contests

L. G. Bentley, chairman of the committee on education, of the Safety Section, A. R. A., devotes his last regular monthly circular, that for February, to an argument designed to demonstrate the value and the practicability of contests between different railroad departments, or between different territorial sections of departments.

Basing the argument on carefully recorded results of successful safety contests which have already been carried out on American railroads and which have indubitably saved lives, the plan is outlined as follows:

A Workable Plan

The contest should run for one year and thus become a permanent institution and not an incident in the operation of the railroad.

Its inception should be a mandate of the president, thus insuring full official support and loyal co-operation of the rank and file.

It must be fair, that is, there should be separate contests in the Transportation, Track and Structures, Shops, Stores and Stations departments. Two contests in the shops may be necessary in order that the contesting units may be evenly balanced both as to number of men employed and occupational hazard.

All injuries to employees on duty, causing lost time beyond day of injury, should be counted. This in order that the causes of both serious and minor injuries may be reached.

Penalize accidents according to their gravity, taking care not to penalize a fatal injury so heavily as to place a unit out of the running for the rest of the year. A penalty of five debits for an employee killed, two debits for a reportable injury, and one debit for other lost time injury is suggested.

The number of debits per million man-hours is the determining factor in computing success.

Clear, concise bulletins giving the standing of contestants should be issued promptly at the close of each month, showing cumulative results to date. They should be printed not mimeographed, and be suitable for posting both on bulletin books and bulletin boards. Simplicity is desirable. A separate bulletin for each contest is important.

Safety contests demand "fact finding." All lost-time injuries should be promptly investigated, properly recorded and correctly reported.

The purpose is five-fold, viz.: This finds the cause, fixes the responsibility, prevents repetition, determines extent of injury and creates confidence and interest. This feature will hold many injuries in the "lost time" column which would otherwise run into "reportable injuries."

Safety committees, if appointed or elected for the period of and tied to the contest, are sure to develop interest and pride in a safety record that will be of great help.

Contests within the plant or other units are most desirable, for each can actually see what the other is doing and take lessons and profit therefrom.

These contests should be checked up daily, instead of monthly, and a suitable means of posting results adopted and carefully followed. * * *

The best arrangement for posting results is to use small metal plates with the figures stencilled thereon, sliding them into slots attached to the board. * * * One certain responsible person should post the board every morning.

The award of trophies. Various kinds of trophies are available, such as silver cups, banners, flags, statuettes, tablets and parchment scrolls. Some kind of visible trophy is necessary, and it is the writer's opinion that the trophies should remain permanently with the winners. The trophies should be presented with appropriate ceremony to "the gang" by the highest ranking officer and the award should be made just as soon as possible after the contest is closed so that interest in the "new contest" may be freshly aroused.

The circular contains an illustration of a bulletin board 5 ft. high and 10 ft. wide on which the records of different departments or shops can be entered day by day for 31 days, with columns for monthly and annual totals. Summarizing his conclusions, Mr. Bentley says:

Safety Contests are recommended for the following reasons:

1.—They demand fact finding and place responsibility for accidents.

2.—They bring out the very best there is in an organization.

3.—They disclose these units which are not properly functioning and encourage those which are making good.

4.—They link more closely many vital interests of employer and employe.

5.—They are in a righteous cause.

6.—They save lives.

It is suggested that all railroads not having safety contests should begin them at once, and that those which have tried the plan and have been disappointed consider possible revision in the light of new information.

Baltimore & Ohio

Sharp upturn in traffic in recent months, with increased efficiency, to make 1928 results favorable

At the end of the first nine months of 1928 the gross revenues of the Baltimore & Ohio were less by $13,425,513, or 7.2 per cent, than for the same period of 1927. Expenses were reduced to such an extent, however, that net operating income was but 5.4 per cent less than for the first nine months of 1927. A sharp revival in traffic began in September and continued through the remainder of the year. This revival in business had by the end of November reduced the decline in gross revenues to about $10,000,000. With this improvement in earnings, the road continued to hold its expenses in check so that for the eleven months' period net operating income had reached a total some $2,000,000 in excess of that for the same period in 1927. Should December operating results be no better than those of that month in 1927 the road would still be able to show the highest net railway operating income it has ever earned, with the exception of 1926.

The Baltimore & Ohio paid a dividend of 2½ per cent on its common stock in 1923 after a period of three years in which no dividends were paid. In 1924 and 1925 dividends on common stock amounted to 5 per cent and since that time they have been on a 6 per cent basis. For the years 1923 to 1927, inclusive, the road has earned a surplus over its dividend requirements averaging $11,786,000 per year.

Extensive Capital Expenditures

The company has, in recent years, made extensive capital expenditures for the promotion of operating efficiency. Its average annual increase in property investment for the five years, 1923-27, inclusive, was $27,702,000, expenditures for equipment accounting for approximately 63 per cent of this total and roadway improvements for the bulk of the remainder. The tendency shown by many roads in recent years of spending relatively larger sums on roadway improvements than on equipment has not as yet characterized the policy of the Baltimore & Ohio.

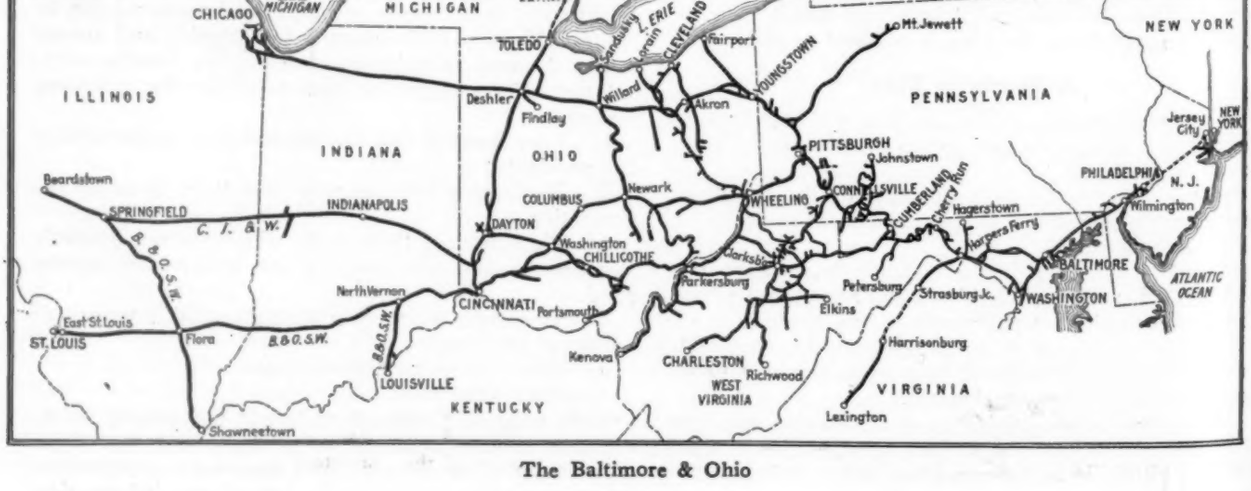
Probably the largest single item in capital expenditures under the heading of roadway and structures undertaken in recent years has been the grain terminal and wharf improvements at Locust Point (Baltimore). Other important improvements in this category include the construction in conjunction with the Reading of a modern produce and perishable terminal at Philadelphia, an extensive bridge renewal and strengthening program which has increased engine ratings on several hundred miles of line, enlargement of yard facilities at Youngstown, O., the relocation of seven miles of line near Warwick, O., to reduce maintenance costs and flood damage, the construction of two miles of elevated track in the Pittsburgh district to avoid level contact with other lines and a considerable addition to water station facilities. Each year has seen important grade crossing elimination projects completed. Automatic signaling and automatic grade crossing protection has been extended. Line and grade revision has been undertaken at several points and a new terminal yard at Cincinnati has recently been completed.

Modernization of Locomotives Big Factor In Increased Equipment Investment

Expenditures for new equipment have been devoted in large part to cars—some 20,000 freight cars and over 200 passenger train cars having been ordered in the past five years—and in the modernization of existing equipment. While locomotive orders in recent years have not bulked large, the road has done important experimental work with new designs of power built in its own shops and has brought its locomotives generally up to a high standard of modernization and efficiency.

Significant of the road's improved locomotive conditions is the increase of 8.3 per cent in average tractive power from 1923 to 1927, with less than 200 new locomotives placed in service during that period. The increase is to be accounted for in large measure by the extensive rebuilding operations which the company has carried on in its own shops.

Baltimore & Ohio revenues and expenses figures for 1921-27 are given in Table 1. Table 2 shows comparative freight operating statistics for the first ten months of 1928, as compared with the same period of 1926, which year is selected for comparative purposes since gross ton-miles for the ten-month period in that year almost



The Baltimore & Ohio

exactly equaled the total for the same period in 1928. One factor enters, however, which perhaps may somewhat diminish the force of the comparison—that is the inclusion of the Chicago, Indianapolis & Western and two smaller properties in the 1928 total. The C. I. & W. averages, based on performance when it was operated independently, possibly tend to bring down gross and net ton-miles per train-hour slightly below the total which might otherwise be shown. Even with this handicap, however, if it be such, important improvement is shown in many factors over the two-year period.

Table 1—Baltimore & Ohio—Revenues, Expenses, Dividends

Year	Total Oper. Rev.	Total Oper. Exp.	Net Oper. Rev.	Net Railway Oper. Income	Other Income	Gross Income	Int. on Funded Debt	Net Income	Total Dividends	Rev. per ton-mile (cents)	Oper. Ratio
1921	$199,077,853	$167,072,093	$32,005,760	$21,941,696	$10,125,088	$32,066,784	$22,761,053	$6,388,891	$2,354,529	1.103	83.94
1922	200,843,170	165,021,375	35,821,795	23,735,005	6,187,132	29,922,137	22,810,616	4,375,373	2,354,527	1.060	82.16
1923	255,594,435	199,323,961	56,270,474	42,133,129	6,032,521	48,165,650	23,333,143	22,422,036	6,153,097	1.012	77.98
1924	224,318,795	172,752,632	51,566,163	38,084,324	5,657,290	43,741,614	24,950,935	16,319,690	9,951,865	1.028	77.01
1925	237,546,940	179,099,597	58,447,343	43,034,087	6,489,977	49,524,064	26,478,252	20,793,508	9,951,797	.995	75.40
1926	252,361,830	186,306,273	66,055,557	50,805,337	6,890,426	57,695,763	27,439,262	28,494,294	11,471,253	.993	73.83
1927*	246,078,510	186,168,521	59,909,989	44,817,227	8,570,687	53,387,914	27,963,957	22,632,345	13,319,019	.977	75.65

*C. I. & W., Indian Creek Valley and Cheat Haven & Bruceton included for first time.

These comparisons show, notably, a large reduction in freight train-hours, almost 13 per cent; an improvement of 10.7 per cent in freight train speed, an increase of 15.4 per cent in gross ton-miles per freight train-hour and of 12.5 per cent in net ton-miles per train-hour. Fuel consumption per 1,000 gross ton-miles decreased almost 10 per cent. The coal consumption, 147 lb. per 1,000 gross ton-miles, might seem rather high if attention were not called to the fact that the Baltimore & Ohio uses local fuel of a grade not particularly attractive to commercial consumers.

The ratio of transportation expenses to railway operating revenues was 37 in 1923 and 38 in 1924. In 1926 it had been reduced to 34.7 and averaged 35.5 in 1927. The maintenance of equipment ratio to operating revenues was 36.5 per cent in 1923 and 33.4 in 1927. The maintenance of way expense ratio to operating revenues was 11.5 per cent in 1923 and advanced slightly each year to 12.6 in 1927. Meantime, however, tie renewals (treated) per equated track-mile rose from 204 in 1923 to 213 in 1927—reaching 237 in both 1925 and 1926—and rail replacements in the five-year period rose from 857 miles to 1,139.

Motor Coach Operation May Cut Passenger Costs

The experience of the company with its passenger traffic, unfortunately, has been no exception to the general rule—a decline of nine per cent in earnings for the first eleven months of 1928 as compared with the same period in 1927, combined with other serious decreases in preceding years. The company has quite recently, however, been granted authority to operate motor coaches on the highways in West Virginia and the further extension of such service, while it may not add materially to railway passenger revenues, ought at least to reduce losses occasioned by such operations.

The Baltimore & Ohio has continually improved its service to passengers, providing faster schedules and improved on-time performance. It was a pioneer among the railroads which have provided more comfortable accommodations for day-coach passengers. Its recently completed motor coach terminal in New York, where passengers board motor coaches for train connections at Jersey City, is probably not surpassed in luxury by railroad station facilities anywhere.

The Baltimore & Ohio in 1927 issued 632,425 shares of common stock, selling it at $107.50 per share (less an underwriting charge of $2.25 per share). From the proceeds of this issue, $66,562,731, the company was able to reduce its funded debt by $35,800,000, changing its ratio of stock to total indebtedness from 26.6 per cent to 33.5 per cent.

The road's net railway operating income in 1927 was equivalent to 5.22 per cent on the recorded investment in property used for transportation purposes. In 1926 the return was 5.84 per cent; in 1925, 5.46 per cent; in 1924, 4.67 per cent; and in 1923, 5.37 per cent.

The tonnage of freight traffic as divided among the various commodities has remained fairly constant during the past few years. In 1927 the division was as follows: Products of agriculture 4.5 per cent; products of animals, 1.1 per cent; products of mines 62.8 per cent (bituminous coal 46.7 per cent); forest products, 4.3 per cent; manufactures and miscellaneous, 25.3 per cent; and l.c.l., 2 per cent. The average haul in freight service in 1927 was 192.1 miles and the average receipts per ton-mile 0.977 cents.

Table 2—Comparison of Selected Freight Operating Statistics

	10 Months 1928	10 Months 1926	Per cent of change Inc.	Dec.
Mileage operated	5,534	5,197	6.5	
Gross ton-miles (thousands)	38,190,282	38,005,995	0.5	
Net ton-miles (thousands)	17,896,504	18,274,752		2.1
Freight train-miles (thousands)	19,273	19,956		3.4
Freight locomotive-miles (thousands)	24,540	25,084		2.2
Freight car-miles (thousands)	934,603	931,128	3.7	
Freight train-hours	1,686,220	1,936,313		12.9
Tons of coal consumed by freight locos.	.....	.....		
Car-miles per day	29.3	29.8		1.7
Net tons per loaded car	31.1	31.3		0.6
Per cent loaded to total car-miles	61.6	62.6		1.6
Net ton-miles per car day	561	584		3.9
Freight cars per train	49.5	47.7	3.8	
Gross tons per train	1,982	1,904	4.1	
Net tons per train	929	916	1.4	
Train speed, miles per train-hour	11.4	10.3	10.7	
Gross ton-miles per train-hour	22,648	19,628	15.4	
Net ton-miles per train-hour	10,613	9,438	12.5	
Lbs. coal per 1,000 gross ton-miles	147	163		9.8
Loco. miles per loco- day	64.1	67.6		5.2
Per cent freight locos. unserviceable	19.5	16.1	21.1	
Per cent freight cars unserviceable	5.4	4.3	25.6	

Statistics on performance of the Baltimore & Ohio, on the whole, indicate steady progress toward increased efficiency, improved earnings and greater financial strength. Just now, in addition to the improved traffic and earnings of recent months, perhaps more consideration has been given to the property's prospects in consolidation than to any other single factor. Progress along such lines, of course, depends upon the attitude of the Interstate Commerce Commission, and what this attitude will be is a matter largely of conjecture. Regardless of what this attitude may eventually prove to be, it suffices for a present estimate of the road's situation that it is committed in its present form to giving as high a character of service to its territory as its earnings justify.

SENATOR BINGHAM, of Connecticut, has introduced in the Senate a bill, S. 5350, to amend the air commerce act of 1926 to provide for the annual examination and rating by the Department of Commerce of civilian schools giving instruction in flying, as to the adequacy of the course of instruction, as to the suitability and airworthiness of the equipment, and as to the competency of the instructors.

Protecting Coal While in Storage

TWO devices, known as coal storage protectometers, designed for the observation and detection of any dangerous heat development in stored coal, have recently been placed on the market, after several years of experimental and development work.

Frequently, mined coal, when placed in storage, undergoes a chemical change, commonly known as "weathering." This change is a form of oxidation and is caused by the fact that when the coal is piled, more or less air is trapped in the interstices between the particles of coal. The most of this weathering occurs from six to ten weeks after storing.

Coal has a tendency to heat, during the time that oxidation is going on. However, as long as the temperature does not exceed 125 deg. F., no danger of ignition of the coal exists. While, in some instances, temperatures as high as 140 deg. F., have been observed without ignition occurring, it has been found that in no instance where the mercury has reached 150 deg. F., has the temperature receded. As the result of these observations, 150 deg. F., is considered to be the critical temperature or danger point at which precautionary measures to prevent combustion must be taken.

Surveying the Area Around a "Blown" Sentinel Type Protectometer with the Dial Type or Recording Protectometer

The method of coal storage on which the use of the Sentinel and Dial type protectometers is based, is illustrated in one of the drawings. A maximum height of 15 ft. for the pile of coal is recommended by the manufacturers of these devices. Referring to the assembly drawing, the Sentinel type protectometer consists of a special acid-resisting steel tube *A* containing a spring *B* and plunger, which is held down by a chain of fusible links. These links are placed every two feet, along the length of the tube and are insulated, one from the other, so that each occupies a separate chamber. These links fuse at 150 deg. F., thus releasing the signal head, which has been held in place against the compression of the spring *B*. When "blown", the signal head extends 10 in. above the top of the tube, which affords a conspicuous warning that a dangerous condition exists at that particular point. Each Sentinel type protectometer is designed to provide a sensitive range for the protection of from 75 to 150 tons of coal piled 15 to 20 feet high. It is the usual practice to arrange them, as shown in one of the drawings, from 15 to 20 feet apart.

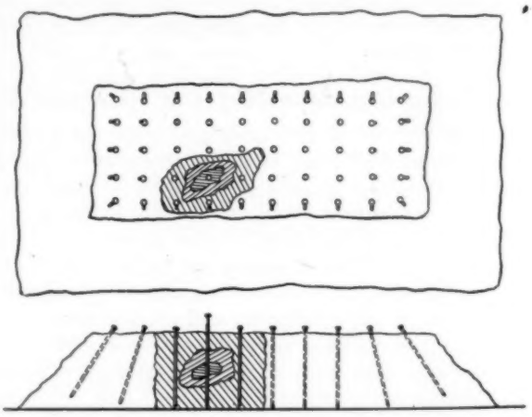
When a link is "blown", it is only necessary to remove the fluted bronze tip, which is designed to provide easy entrance into the mass of coal, pull out the chain of links, insert a new link, replace it in the tube and screw on the tip. The life of a Sentinel type protectometer is estimated to be five years, although many have been in service for much longer periods.

The Dial or recording type protectometer is used for surveying around a Sentinel type that has given its "danger warning". It consists of three sensitive thermometric elements enclosed in an acid-resisting steel tube also fitted at the tip with a fluted bronze point designed to facilitate entrance into the mass of coal.

Assembly Drawing of the Sentinel Type Coal Storage Protectometer Showing the Location of the Fusible Links

The three sensitive elements are located at different levels in the tube: 2 ft. 8 in. and 1 ft. 3 in. from the tip, respectively. Each element leads to a direct-reading dial-type thermometer, and it requires from three to five minutes immersion to obtain maximum readings. Each dial is calibrated in degrees Fahrenheit, with the warning and absolute danger zones emphasized by green and red backgrounds, respectively.

A hot spot in the coal pile, having been thus indicated, the inspector probes around the apparent hot portion with the Dial type protectometer, surveying the location and volume and determining the temperature at three levels with each insertion. The quantity of hot coal is thus measured, and is then removed and disposed of.



Coal Pile Showing the Method of Locating Sentinel Type Protectometers—The Cap of the Protectometer Extending Down Through the Burning Portion of the Pile Has Been Released

The manufacture and sales of the Sentinel and Dial type protectometers were recently taken over by the Coal Specialties Company, 50 Church street, New York.

Commissioner Meyer Discusses Hoch-Smith Resolution

Calls it a 100-year job for 100 Solomons—Makes railroads shock absorber for entire economic structure

THE tasks imposed upon the Interstate Commerce Commission by the provisions of the Hoch-Smith resolution are "Herculean," Commissioner B. H. Meyer said in an address before the Traffic Club of Milwaukee on January 15. In fact, he added, literal and complete execution of all its provisions is probably beyond the power of any body of men, and he remarked that he could "keep a hundred Solomons busy on this program for a hundred years."

"From the time of its creation to the passage of the Hoch-Smith resolution the Interstate Commerce Commission had said. . . .that its duty under the law was to deal with transportation conditions and not with commercial conditions . . . . The Hoch-Smith Resolution changed all this . . . We are to keep in view three leading factors: (1) the general and comparative levels in market value of the different classes and kinds of commodities through a period of years; (2) a natural and proper development of the country as a whole; and, (3) the maintenance of an adequate system of transportation. Please reflect upon the scope and meaning of these instructions from Congress."

Commissioner Meyer summarized what he said appears to him to be the underlying theory expressed in the resolution by saying that "it attempts to make the railroads in the United States the shock absorber and balance wheel for the entire economic life of the country to the extent to which this may be accomplished through the instrumentality of railroad rates." An abstract of his remarks on this subject follows:

Commissioner Meyer's Address

You are all familiar with what is known as the Hoch-Smith Resolution. While in form it is a resolution, in essence it is an amendment to the interstate commerce act and has all the force and effect of law.

From the time of its creation to the passage of the Hoch-Smith resolution, the Interstate Commerce Commission had said hundreds, and probably thousands, of times in its official reports that its duty under the law was to deal with transportation conditions and not with commercial conditions. The dividing line between transportation conditions and commercial conditions is often difficult to draw and over-lapping of the two domains is common. In a certain sense, the commission had always given consideration to commercial conditions, but this was rather in an incidental and indirect way by giving weight to such well-known factors as value, risk, competitive articles, and other considerations known to every experienced traffic man. From the standpoint of mere carriage by railroad the difference between valuable and cheap articles may not be great; yet the valuable article is classed first-class or double first-class, while the cheaper article may fall into Class 5 or one of the lower lettered classes. The ability to bear a certain charge is partly at least a commercial consideration. Freight classifications rest to some extent on commercial considerations. Commercial considerations of this character had always been taken into view by the commission. However, when we were asked to establish rates on the ground that they would permit the applicant to increase his output, to extend his territory, to increase his profits, to strengthen his competition, to fortify his location, and similar matters, generally speaking, we said in one form or another that these were commercial conditions which we were not permitted to give weight in establishing just and reasonable rates under the law. We said that the law restricted us to transportation conditions. Such was our unbroken line of decisions.

The Hoch-Smith resolution changed all this. It not only authorizes but it directs us to take into consideration commercial conditions. This in a word is what may be termed the revolutionary effect of that piece of legislation.

Please note that two great considerations pointed out in this language are that we shall weigh the conditions which at any given time prevail in our several industries and further that we shall do whatever it may be possible for us to do to promote the free movement of commodities. Here we have a general legislative mandate which is not confined to a limited group of commodities but it embraces all commodities. It embraces everything which the railroads carry, everything contained in our classifications with their more than 10,000 items.

The second paragraph of the resolution is long and contains provisions of the highest significance. It authorizes and directs the commission to make a thorough investigation of the rate structure of common carriers subject to the interstate commerce act. We are to study the character of all of these rates and subject them to the tests laid down in the law. We are to measure the burdens which existing rates impose upon different commodities, to study the advantages and disadvantages of various localities and parts of the country, to apply the tests of the law to all classes of traffic and to all kinds of commodities; and then having done all these things we are to make changes, adjustments, and redistributions of the burden of transportation wherever our investigations suggest such changes should be made. In making these changes, adjustments and redistributions of the transportation burden we are to keep in view three leading factors: (1) the general and comparative levels in market value of the different classes and kinds of commodities through a period of years; (2) a natural and proper development of the country as a whole; and (3) the maintenance of an adequate system of transportation.

Please reflect upon the scope and meaning of these instructions from Congress. The men present in this room are nearly all engaged in industry and commerce. Will you please tell me whether the manner in which you are conducting your industry and the places in which you have located them indicate that you are contributing your share to a natural and proper development of the country as a whole? I assume that you are but how can we know? What tests are to be applied in order to determine whether national development is proceeding along sound lines or along lines that should be diverted or obliterated? What is a natural and proper development of the country? These are mighty questions of the high-

est importance and the commission must answer them.

What I have said thus far about the mandates of the Hoch-Smith resolution is sufficient to indicate that the tasks imposed upon the commission by its provisions are Herculean. In fact, literal and complete execution of all its provisions is probably beyond the power of any body of men. However, Congress does not intend to ask the impossible. It had deliberated many months and finally passed this resolution. After Congress has told us what it wants done we proceed to do it. That is what the commission was created for. We ask no questions but roll up our sleeves and go to work in accordance with our instructions. We are conducting a long series of investigations started by this resolution. We are trying to the best of our ability to work out every possible beneficial result which can be effected under it.

I fear many of those who have concerned themselves with the resolution have no proper appreciation of the practical work involved in a reconstruction of the rate structure of the country. In a sense reconstruction of the rate structure has been in progress from the time railroads first began to carry freight for hire. Every rate prescribed by a state commission or by the Interstate Commerce Commission represents to a greater or less extent a reconstruction of the rate structure. However, having in view perhaps in the initial stages of the discussions leading to the passage of the resolution, measures which might assist in the restoration of agriculture, Congress apparently concluded that the processes of modification and reconstruction of rates as effected through a long succession of proceedings were not expeditious enough and that the commission should be given authority and that it should be required to accelerate the process of perfecting the rate structure in the light of the new and additional standards prescribed in the resolution. We are now and have been for many months in the midst of this work.

Responsive to the direction contained in the third paragraph of the Hoch-Smith resolution to the effect that the commission shall with the least practicable delay prescribe the lowest lawful rates on the products of agriculture which are affected by depression compatible with the maintenance of adequate transportation service, we have issued a number of reports in which such rate changes have been made, based in part or entirely upon the third paragraph of the resolution. One of these orders has been taken into court by the carriers and before very long we hope to have the benefit of the views of the Supreme Court of the United States with reference to the proper interpretation of the Hoch-Smith resolution.

The Railroads a Shock Absorber

This third paragraph of the resolution is the one that has been most widely discussed and concerning which many more people seem to be informed than the first two paragraphs. Nevertheless, the first two paragraphs are not only just as important, but they are more far-reaching. In some respects they are even more important for the reason that they direct the commission to apply the principle underlying the last paragraph not only to agriculture, but to all other products and commodities which move by railroad. In order to apply fully the ideas of the resolution we should be informed at any given period of time with respect to the degree of prosperity or the lack of it of every single enterprise in this great country in order that we may intelligently lift burdens off those shoulders which are less able to bear them and place them on the shoulders of those that are more able to bear them in so far as these burdens are affected by charges for transportation. I have said that I could keep a hundred Solomons busy on this program for a hundred years. I might summarize what appears to me to be the underlying theory expressed in the resolution by saying that it attempts to make the railroads in the United States the shock absorber and balance wheel for the entire economic life of the country to the extent to which this may be accomplished through the instrumentality of railroad rates. While, as previously suggested, complete compliance with such requirements clearly exceeds the ability of any set of men, we are endeavoring to execute this program to the fullest extent of our ability. And in this, as in all other matters, we need the advice and active cooperation not only of all the railroads, but of all the industries in the country.

I have said something about uniformity in classification. It is generally easy to bring about uniformity by reducing ratings, but who has ever found an instance where it was easy to effect uniformity by increasing ratings? Similarly, it is generally easy to suggest reconstruction of the rate structure through reductions in rates, but I have yet to see the first body of volunteers to advocate reconstruction of the rate structure by increasing rates on commodities represented by that body. I have seen regiments ready to propose increases in rates on commodities shipped by someone else. This is all very human but I need not tell you gentlemen that neither uniformity in classification nor extended changes in the rate structure can properly and justly be brought about solely through reductions. Under the mandate of the Hoch-Smith resolution when the economic condition of an industry changes the rates affecting that industry should also be changed. Theoretically, at least, this means an increase in rates during prosperity and a reduction during adversity.

We have developed, as many of you know, methods intended to expedite proceedings. We have endeavored to facilitate the adjustment of controversies. In this we have had the co-operation of the railroads and of the industries. This same co-operation I believe can be applied more extensively than it ever has been in the past. In the first instance, the railroads and those who use the railroads may well confer more extensively than has generally been done, before they come to the commission. There has been a persistent tendency for interested parties to withhold from one another a full disclosure of the situation concerning which complaint is made, apparently in the thought that by doing so the opponent can be surprised at the hearing before the commission. The element of surprise should be eliminated as far as possible from our proceedings. Several years ago I read articles in a Law Journal which described improvements in procedure in the courts of Great Britain. The writer pointed out that "firing from ambush" had long been abandoned. If firing from ambush can be abandoned in the courts of England, can we not banish firing from ambush in proceedings before the Interstate Commerce Commission? We can and we should do so. Will you gentlemen help us to bring about this result? You can and I believe you will.

Finally, a few words about the commission as a body. The institution known as the Interstate Commerce Commission is composed of eleven men. When we sit in conference we function as a Commission. We meet together at regular and special times to consider and determine the multitude of things which the law requires us to do. Individually and collectively we represent the United States. Each member of the commission comes and should come only from the United States. That any member represents or should represent a particular state or section of the country or some particular industry, occupation or profession is utterly wrong and inconsistent with sound government. When these eleven men sit around the table to discuss this great procession of cases they have in view one single purpose, to arrive at a con-

clusion that shall be as fair and as just as their understanding of the law and the facts permit this to be done. In the last analysis our conclusions are a matter of judgment within the law. Every external suggestion is excluded from the conference room and nothing but that which appears in the public record of the case is permitted to influence the decision.

I. C. C. Appropriations Recommended

WASHINGTON, D. C.

APPROPRIATIONS amounting to $7,496,289 for the Interstate Commerce Commission for the fiscal year ending June 30, 1930, are recommended by the House appropriations committee in its report on the independent offices bill submitted to the House on January 16. This represents a decrease of $158,456 as compared with the total appropriated for the current fiscal year and a decrease of $717,536 as compared with the Budget estimates for 1930, but it includes an increase of $269,964, or to $2,834,464 for the general expenses of the commission and some $665,000 of reappropriations of the unexpended balances from the current year is to be added to the amounts recommended for various bureaus.

The Budget estimates for 1930 were $163,270 in excess of the current appropriations, exclusive of amounts necessitated by adjustment of salaries under the Welch Act, but the committee took the position that it would be inadvisable to provide for all of the increase of examiners asked for by the commission under present conditions. In explanation of the recommendations the report says in part:

A net increase of $169,490 is asked for in the appropriation for general expenses. It is out of this appropriation that the expenses of the bureau of formal cases are met. There is a serious congestion in the decision of the formal cases. On October 31, 1922, there were pending 1,846 cases, while on the same date in 1928 the number of cases pending was 2,740, showing the steady accumulation of cases. Much of the present congestion is due to inquiries arising under the Hoch-Smith resolution.

The commission has asked for 25 additional associate examiners to speed up the work of taking testimony in the field. In justifying the request, the commissioner expressed the fear that if the additional examiners were granted that it would result in a congestion of cases pending before the commissioners for final decision. The testimony indicates that the commissioners are now putting in a large amount of overtime work. The remedy which the commission has suggested for this situation is the enactment of legislation which would give them authority "to delegate to individual commissioners and employees of the commission the power to perform specified duties, and to consider and determine specified matters and subjects, subject to the general control and supervision of the commission, and the exercise by it of appropriate powers of review either through the commission or a division thereof." Under the present law the commission may delegate its authority to divisions of the commission made up of commissioners. It may not delegate its authority to individual commissioners nor to employees.

Until the commission gets the authority of law to further delegate its powers so that the congestion of cases at the Washington office can be cared for, the committee does not believe it would be good administration to unduly increase the hearing of cases in the field by the employment of additional examiners and thus further increase the congestion of cases before the commissioners. Consequently, the committee has allowed only 13 of the 25 additional examiners requested, deducting $52,536 from the estimate, covering the salaries and traveling expenses of the 12 examiners disallowed.

Regulating commerce: The Bureau of Accounts is operated under this appropriation, and there is a net increase in the estimates, aside from Welch Act adjustments, of $16,280, principally for increased traveling expenses. No additional personnel is estimated for. The work of policing the accounts of the carriers has been held in abeyance in recent years, due to the large number of so-called recapture cases under section 15 (a) of the law. The examinations so far held indicate that the showing of net railway operating income on the part of the carriers examined will be increased by something like $17,000,000. There has been a steady reduction from year to year in the number of cases pending. The following statement shows the number of cases pending at the end of various fiscal years:

1927	1,007
1928	738
1929 (estimated)	622
1930 (estimated)	472

Safety of employees: This appropriation covers the work of the Bureau of Safety. The Budget estimate of $525,000 is an apparent increase of $9,176, but since $17,860 is necessary to effectuate the Welch Act increases, there is an actual decrease in the estimate of $8,684.

Signal safety systems: The Budget estimate of $48,000 for investigations and tests of signal and train-control devices is $100,320 less than the current appropriation, but when the Welch Act increases are taken into the calculation the actual decrease is $105,580. This decrease is brought about by the consolidation of this work with the Bureau of Safety and confining the activity to inspecting the condition of and the performance of the devices which are in service.

The commission has made orders at various times requiring the installation of automatic train-control devices up to about 11,000 miles of railroad, which have been pretty well complied with. Out of about 80 installations required some 72 or 73 of them have been completed, inspected, and approved.

Locomotive inspection: The Budget estimate of $490,000 for this bureau represents an actual decrease, after the Welch Act adjustments are cared for of $20,396. This appropriation has been fairly constant in recent years.

Valuation of property of carriers: The Budget estimate of $2,540,000 is $340,000 in excess of the current appropriation, but since $137,840 is required for Welch Act adjustments, there is an actual increase of only $202,160, which the committee has granted. The increase involves the addition of 34 employees to the Washington office and 37 in the field.

The 3-year program initiated by this committee, the period for which ended on June 30, 1928, is well advanced toward completion. The field work, underlying reports, and tentative valuations are 100 per cent complete. Out of a total of 745 hearings to be held, all but 24 are complete, and of a total of 1,035 final reports, all but 307 have been adopted.

Printing and binding: There is a reduction of $90,000 in this appropriation for printing and binding, due to the anticipated completion during the present year of the extra amount of printing incident to the valuation work. The Budget estimate of $175,000, which has been allowed by the committee, is substantially the same amount that was carried for this item prior to the speeding-up period of valuation work.

Members of the commission who had testified before a sub-committee of the appropriations committee had stated that the commission had been subject to a great deal of criticism for falling behind with its work, because of the increasing volume and an insufficient force. Commissioner Campbell said that although the commission had conducted a "drive" to reduce its docket of 2800 cases and in 1928 disposed of 375 more cases than in 1927, the total number of cases on its docket on December 1 was only 107 less than on the same date in 1927. The cost of proceedings conducted under the Hoch-Smith resolution was estimated at $250,000. Last year, Mr. Campbell said, the commission had had to curtail its work about the first of April because of a shortage of about $100,000 in funds and in approximately 250 cases hearings had to be postponed until after June 30, when a new appropriation became available. Commissioner Eastman told the committee that an increase in the number of examiners might increase the congestion of work to be handled by the commissioners but that the commission had recommended legislation to authorize it to delegate authority to individual commissioners or examiners. Commissioner Lewis told the committee that whereas in the first 34 years of its life the commission published 64 volumes of its reports, in the 7½ years since he became a member it has completed 85 volumes, 9 of which are not printed.

Communications and Books

Heavier Car Loading

DEMING, N. M.

TO THE EDITOR:

An editorial which appeared in the *Railway Age* of November 10, page 915, discussed the need of heavier car loading. The heavier loading of equipment is of vital importance to the railways, but the consignee is also entitled to some consideration in the loading of so-called "Team Track" commodities. The railways give no more free time on an 80,000-lb. load than they do on a 40,000-lb. one. As a result the receiver is frequently compelled to pay demurrage on a large load, which he would not be compelled to pay on two lighter loads, and in consequence insists that his shippers load only the classification minimum.

It is my thought that a graduated scale of demurrage charges based on the weight of the load might induce consignees to accept heavier loadings from their shippers.

W. S. CLARK.

A Proposal for Lower Taxation

TENAFLY, N. J.

TO THE EDITOR:

"Railroad Facts," published by the Committee on Public Relations of the Eastern Railroads (1927), contains the following statements:

> I. Railroad taxes are now running at the rate of one million one hundred thousand dollars a day.
>
> II. The railroads are placed in the dangerous position of being compelled to pay from year to year enormous increases in taxes on improvements made to provide adequate service. . . . In the case of grade crossings, for example, the railroads not only have to pay a large part of the cost of eliminating the crossing, but the resulting new bridge frequently becomes an object of new taxation.
>
> III. The situation demands the help of every citizen, whose duty it is to see that the taxes he pays are wisely expended, and with the same system and economy which should characterize any business enterprise.

A strong sentiment has developed among industrial leaders that sensible management of public business requires the taxing of land-values rather than improvements, according to President Roosevelt's statement: "The burden of municipal taxation should be so shifted as to put the weight of taxation upon the unearned rise in the value of land itself rather than upon the improvements."

This principle applied to the railroads would reduce their tax burden, now about double what it should justly be, and would equalize tax payments with the value of benefits received.

The review of federal valuation prepared for the Presidents' Conference Committee by Frederick H. Lee, under date of August 7, 1928, shows on page 4 total present value of railroad land $498,000,000 for 31 per cent of total mileage; which works out equivalent to $1,640,000,000 for 100 per cent mileage.

The total land-value of the United States is conservatively estimated at $100,000,000,000 (less than $1,000 per capita); the railroad share is therefore about 1.64 per cent of total land-vaiue.

According to the Chamber of Commerce of the United States, Finance Department (Local Fiscal Problems, May 1928, page 3), our total tax payments are about twelve billion dollars a year or 12 per cent of total land-value.

If railroad taxes were 12 per cent of railroad land-value, therefore, they would be only about two hundred million dollars a year (1.64 per cent of twelve billion dollars is $196,000,000) instead of $375,000,000 as for the year ended December 31, 1927—according to the report of Interstate Commerce Commission.

It is undeniably true that the railroads, like other enterprises, have been heavily overtaxed by the methods of raising public revenue heretofore employed.

The public is ready, with capable leadership, to abandon the mistaken policy of taxing improvements (railroad, industrial, etc.) as illustrated by the successful experience of Pittsburgh with its "graded tax" plan adopted in 1913.

Railroad Taxes for year ended December 31, 1927	$375,000,000
Total Tax Payments in the United States	$12,000,000,000
Railroad percentage of total tax payments	3.125
Total Present Value of Railroad Land	$1,640,000,000
Total Land-value of the United States	$100,000,000,000
Railroad percentage of total land-value	1.64
Railroad percentage of total tax payments if proportioned to land-value: 1.64% of $12,000,000,000 or about	$196,000,000
EXCESS PAYMENT of taxes by railroads under present system, measuring benefits by land-value	179,000,000*
(see first line)	$375,000,000

* Equivalent to 6% annual interest on nearly $3,000,000,000 capital.

GLADWIN BOUTON.

New Book

Deutscher Reichsbahn-Kalender, 1929. Edited by Reichsbahn-director Dr. Hans Baumann. Illustrated. Published by Konkordia Verlag, Leipsig, Germany. Price, 4 marks.

This is the third year for which the German State Railway Company has issued this interesting calendar. In size, 6¼ in. by 9½ in., it has but two or three days to a page so it is a volume of some 200 pages, printed on one side only; and the dates on each page take up only one-fourth of the space thereon. The remainder of each page is given over primarily to illustrations but with some explanatory text, all descriptive of the railway's service. What we have, then, is not so much a calendar —although it is complete in that respect—but rather a picture album of the German railways. All phases of the railway's activities are covered—maintenance of way, shops, accident prevention, terminal facilities, locomotives, communications, advertising, electrification, air-rail co-ordination, employee training and welfare, etc.—as well as places of interest to the tourist. The illustrations are clear; the paper is of good quality; and the printing excellent. The cover is in color—an artistic portrayal of a station scene, with a landscape background.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Canton Days—The First Hundred Years or So. Brief and sparkling history of the Canton Company of Baltimore. Illustrations include a picture of Peter Cooper (p. 5), Baltimore & Ohio train ferry, 1885 (p. 29), Union Railroad depot in the 70s (p. 23) and Canton railroad terminals and locomotives (p. 31). 35 p. Pub. by Canton Company of Baltimore, Baltimore, Md.

Education and Training for Railway Work, by R. Bell. The Assistant General Manager of the London & North Eastern describes the educational arrangements for the staff made by the company, and also how the study of railway subjects in England started in the London School of Economics and spread to other Universities in Great Britain. 16 p. Pub. by London & North Eastern Railway Co., London, England. *Apply.*

25 Jahre, Schweizerische Bundesbahnen 1902-1927—Eine Denkschrift, by Dr. A. Welti. Memoir of events in the first twenty-five years of the Swiss Federal Railways. Illustrated. 113 p. Pub. by Orell Füssli Verlag, Zürich, Switzerland.

Address of Sir Brodie Haldane Henderson, K. C. M. G., C. B., *President of The Institution of Civil Engineers, 6 November 1928.* "The future of the roads is an interesting question to dwell upon. Are they to go on ever increasing in mileage and tonnage carried, or is the point of saturation approaching

when the railways will relieve the roads, giving them again a rest, as happened at the advent of the railways? Perhaps the most probable outcome is that we shall find that both are needed. Whatever happens, there is little doubt that engineers will have many opportunities of displaying their skill and ingenuity. . ." p. 8. On p. 11-20, railway engineering achievements in South America are described. 25 p. Pub. by The Institution of Civil Engineers, London, England.

Labor Legislation of 1928. A survey of changes in State and Federal laws. Monthly Labor Review, December 1928, p. 122-127.

Organized Labor and the Trust, by Lyle W. Cooper. Something of the history of official attitudes and modern developments. Journal of Political Economy, December 1928, p. 720-739.

Unseen Eyes Protect You When You Travel, by Sherman Gwinn. An interview with Timothy T. Keliher, Chief Special Agent of the Illinois Central. American Magazine, January 1929, p. 58-59, 107-109.

Development of the Isothermos Journal Box, by Louis Hall. An illustrated article on a journal box developed and in service on French railroads and others in Europe, Africa and elsewhere, with a note that additional details may be had from the Transportation Division of the Bureau of Foreign and Domestic Commerce in Exhibit no. 851. Commerce Reports, January 7, 1929, p. 20-21.

Traffic Bureaus and Transportation Departments of Chambers of Commerce, prepared by Transportation and Communication Department, Chamber of Commerce of the U. S. A. bulletin based on a special survey designed to bring out the various kinds of transportation departments and traffic bureaus, typical chamber of commerce transportation departments, their organization, finance, and co-operation with other agencies, and the organization of the department in the national chamber. 72 p. Pub. by Chamber of Commerce of the United States, Washington, D. C., *Apply.*

Valuation of Railroads. "A Non-technical and concise discussion of the development of a great regulatory problem" which brings out some often overlooked historical points. 20 p. Pub. by Research Office, National Association of Owners of Railroad and Public Utility Securities, Washington, D. C., *Apply.*

Wood, Metal and Reinforced Concrete Sleepers Compared, by M. Vincent. Brief history of tests of substitute ties on French railways, with recent developments considering cost price, cost of laying, cost of repairs and renewals, value of ties withdrawn from service. Bulletin of the International Railway, Congress Association, December 1928, p. 1076-1084.

Periodical Articles

Airport Designing and Development for the Future, by Stedman S. Hanks. Essentials in air terminals, now infrequently provided. Stone & Webster Journal, January 1929, p. 34-40.

Business Faces Toward the Other Americas, by Lawrence A. Downs. The President of the Illinois Central points out what will come of better communication facilities among the three Americas. Magazine of Business, January 1929, p. 28-30, 67.

Getting Congress to Washington, by Victoria Faber Stevenson. "Members . . . who flit across the Continent in five days by rail and much less by train and plane have little in common with earlier solons who took 75 days from Coast and week from nearby eastern cities." Illustrated. Washington Post, Magazine Section, January 13, 1929, p. 1-2.

The Heritage of the West, by Paul Shoup. The President of the Southern Pacific Company enumerates the natural resources of the Pacific Coast States. Review of Reviews, January, 1929, p. 68-71.

The Lake Superior & Ishpeming Railroad, by Charles H. Gaskell. Illustrated history of a railroad built to transport iron ore with interesting facts and figures on pre-railroad ore handling and transportation. "[In 1854] 1000 tons of ore were hauled in sleighs and wagons to Marquette, Michigan, and there loaded into boats . . . " (p. 39). "In 1928 the ore shipments over the dock will be about 2,600,000 tons." (p. 45). Baldwin Locomotives, January 1929, p. 38-49.

Looking Backward

Fifty Years Ago

The Chicago & North Western has made arrangements with the United States Signal Service at Washington, D. C., for daily receipt of weather reports which will be telegraphed to and posted at 84 stations on this railroad's lines in Illinois, Wisconsin, Minnesota, Dakota, Michigan, Iowa and Nebraska.—*Railway Age,* January 16, 1879.

While the eastern roads were fighting snow-drifts last week, the Southern Pacific in California was blockaded by a sand storm. Near Cucamonga station the Los Angeles-Yuma passenger train was delayed for 15 hours by sand which covered the rails for about four miles to a depth ranging from 1 to 3 ft.—*Railroad Gazette,* January 17, 1879.

The snow blockade in the East was raised last week, after a period of unexampled obstruction. The New York Central was blocked nearly a week west of Utica, N. Y. Passenger trains drawn by six and eight locomotives were hopelessly stalled and had to wait for the slow process of digging out. The Rome, Watertown & Ogdensburg [now part of the New York Central] was closed over a week. West of Buffalo, N. Y., the Lake Shore & Michigan Southern [also part of the New York Central] was badly blocked as far as Erie, Pa., and trains had to be abandoned for several days.—*Railway Age,* January 16, 1879.

Twenty-Five Years Ago

T. P. Shonts was formally elected president of the Toledo, St. Louis & Western [now part of the New York Chicago & St. Louis] on January 14. Charles P. Crawford, auditor of the Erie Coal companies, has been appointed auditor of the Erie.—*Railway Age,* January 22, 1904.

Interesting evidence of the general tendency of railway earnings and profits in the past 10 years is gathered from the report of the New York Railroad Commission, showing the results of passenger and freight traffic annually from 1894 to 1903. Gross revenues from operation per mile of road increased from $13,198 to $17,907 but passenger earnings per mile decreased from 0.62 cents to 0.36 cents. Freight traffic showed better results, with profits increased from 0.229 to 0.253 cents per ton mile. The percentage of passenger expenses to passenger earnings increased from 67.78 to 83.13, a significant indication of the increasing cost and decreasing profitableness of modern passenger traffic.—*Railway Age,* January 22, 1904.

Ten Years Ago

T. C. Powell, formerly vice-president of the Queen & Crescent and traffic vice-president of the Southern, has been appointed director of the Division of Capital Expenditures of the Railroad Administration.—*Railway Age,* January 17, 1919.

Walker D. Hines, assistant director general of railroads, and formerly chairman and general counsel of the Atchison, Topeka & Santa Fe, has been appointed director general of railroads, succeeding W. G. McAdoo. The appointment, which was cabled by President Wilson from France, was announced by Mr. McAdoo at Los Angeles, Cal., on January 11, and Mr. Hines entered upon the duties of his office immediately.—*Railway Age,* January 17, 1919.

In order to provide a responsible channel through which the director general may obtain recommendations for the advancement of railroad practice, the American Railway Association has changed its name to the American Railroad Association and has enlarged its scope to cover the activities of the following associations: The master mechanics, the telegraph superintendents, the freight claim officers, the master car builders, the signal officers and the storekeepers. It will consist of five sections: Operating, engineering, mechanical, traffic, transportation.—*Railway Age,* January 17, 1919.

Odds and Ends of Railroading

An Accomplished Musician

Barbara Lull, daughter of H. M. Lull, executive vice-president, Southern Pacific, Texas and Louisiana lines, is another railway daughter who has made a success in music. She has given several successful concerts in New York in recent months, attracting highly favorable comment from the critics.

Another Family

A strong movement is on foot to change the name of the "Laurentian," on the Delaware & Hudson, to the "Tario Special," since the three Tario brothers practically monopolize the run. John Tario is conductor, Ezra Tario is trainman and Obie Tario is flagman. Their combined service age is 132 years, nearly enough to bid in any job.

A Record Run

With a right of way over all trains on the main line of the Louisville & Nashville, between Lexington, Ky., and Hazard, and train orders allowing a wide open schedule, a special train carrying Lexington firemen and equipment to the mountain city recently broke all records for speed on that division, covering 101 miles of mountain roadbed, through 12 tunnels and over a number of bridges, in two hours and 45 minutes, bucking an uphill grade most of the way.

But Who Would Steal a Whole Railroad

In pursuing his national housecleaning campaign, Juliu Maniu, the new prime minister of Rumania, has discovered that an entire railroad, including tracks, rolling stock and signal system, has been stolen. Railroad inspectors of the old administration were blamed for the disappearance of the road. The road was constructed by Austro-Hungarian engineers in wartime from Cluj, Transylvania, to Jacobeni, Rumania. It was said to have cost almost $4,000,000. Apparently it was dismantled piecemeal and the parts were sold secretly.

Quantity Production

There's no telling what will happen to railway men. Hardly had the item been published stating that Tony Farina of the Reading was the only father of triplets in railway service, when advice was received that there was another such papa in East St. Louis. Now comes the Frisco with its claims. Since, however, these triplets were born after the article was published, they did not affect its accuracy at the time. R. C. Dyer, mechanic at Enid, Okla., is the proud father. The new arrivals are all girls and have been christened Doris, Lotis and Iris.

The "Micky"

Although the Pittsburgh & Lake Erie Railroad operated only 231 miles of road, it has acquired the unique position of being the "busiest little railroad in the whole United States." All four tracks of its main line from Pittsburgh to Youngstown bear a constant burden of freight and passenger traffic. In its biggest year the railroad hauled 50,712,828 tons of freight, which is an average of 41,567 tons per mile of track. No other railroad can boast of a traffic density equal to that of the P. & L. E., which is affectionately known by the old timers as the "Micky".—Wall Street Journal.

Proper Respect

"Back in the days when only presidents and general managers had business cars, with a cook and road stenographer, J. C. McMullen, a rough and ready, hard-working Scot, was general superintendent. He rode freight trains as well as passenger trains and practically carried his office under his hat. One day, in passing a station, he noticed a partly unloaded car of coal. He dropped off a message at the next stop asking the agent if the car was company coal. Several hours later the reply reached Mr. McMullen reading "Yes". By that time the old man had forgotten that he had wired this agent so he sent him a message asking, "Yes what." The agent, thinking he had offended Mr. McMullen by his abrupt "yes", made a second reply "Yes Sir". Mr. McMullen finally recalled his first inquiry and released the joke to his friends.

X. H. CORNELL, *Vice-President and General Manager,*
The Alton Transportation Company.

Swelling the Conscience Fund

Recently a timid, gray-haired woman walked into the office of Frank Jenson, general passenger agent of the Texas & Pacific at Dallas, and laid an envelope on his desk.

"Here is some money belonging to the railroad, that I have owed for 20 years," she said.

She explained that she, with her husband and boy, had ridden on a T. & P. train and had told the conductor that the boy was too young to pay fare, when in reality he wasn't. Both her husband and boy have been dead for a number of years.

The envelope contained several crumpled bills of small denomination, silver and pennies. It also contained a brief note reading:

"Child's ticket and interest in full to date, $36.05. My husband was sick and our money short, but this has always hurt me, so I am glad to make restoration."

The N. & W. Enters the Lists

With the idea that some of its historic furniture might rank well in comparison with that of the Union Pacific, the Delaware & Hudson and the Pennsylvania, the Norfolk & Western has been conducting researches along these lines. First place on the seniority roster goes to a book cabinet now in the superintendent's office at Portsmouth, Ohio, which was built before 1870. It is constructed of solid walnut and elaborately carved. Nearly as old is a walnut desk chair in the comptroller's office, which was used by General William Mahone, the first president of the Atlantic, Mississippi & Ohio. The desk now used by the superintendent of the Pocahontas division, while it is only 38 years old, has had the unusual distinction of serving two N. & W. presidents, one vice-president; two general superintendents and a man who later became vice-president of another railway. Several other pieces of furniture of the rugged construction of the "good old days" are still in the service on the N. W.

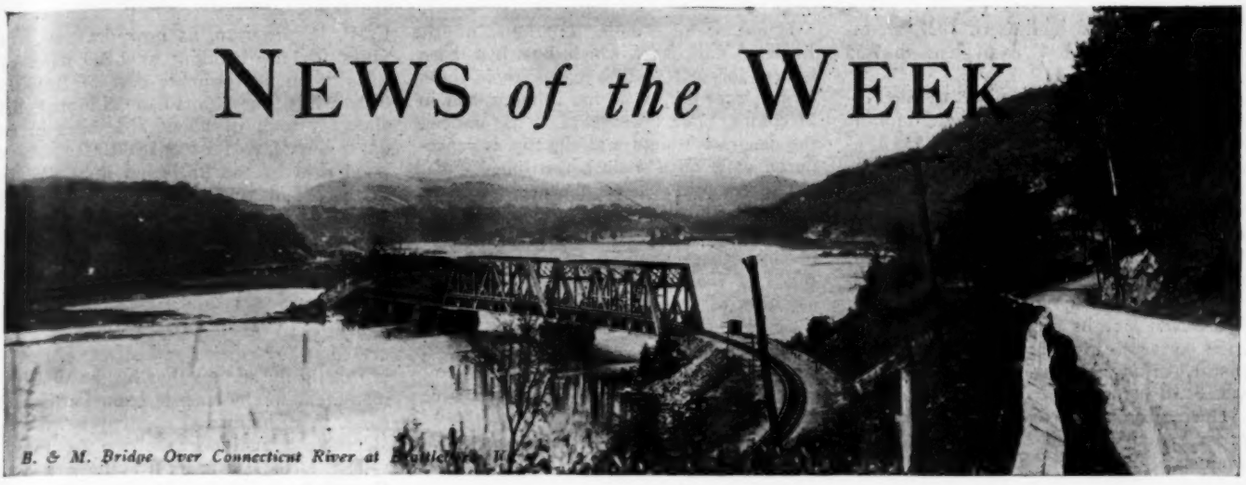
Containers in 1801

I was much interested a few days ago in running across an almost perfect description of the "modern" container system, written by Dr. James Anderson, an Englishman, in 1801, long before the introduction of the steam locomotive. Dr. Anderson wrote:

"Suppose a railway were brought from the wharves to Bishopsgate street . . . . all the wagons to be made of one size and form, each capable of containing one ton of sugar or other goods of similar gravity. Let the body of each of these wagons be put upon a frame that rests upon the two axles of the four wheels calculated to move only upon the railway, and let each of these wagons be loaded with goods which are to go to the same warehouse or its vicinity. The whole of the wagons being thus loaded, they are moved forward till they come to the end of the road at which place they should be made to pass under a crane. The crane would lift the wagon upon another truck formed for street use and when emptied at the close of the day, returned to the railway truck, which returns to its point of departure."

H. H. SHEPARD, *Vice-President,*
Brooklyn Eastern District Terminal.

NEWS *of the* WEEK



B. & M. Bridge Over Connecticut River at Brattleboro, Vt.

THE WESTERN RAILWAY CLUB will hold its next meeting on Monday evening, January 21 at Hotel Sherman, Chicago, with a paper by a representative of the American Car & Foundry Company on complete processes of car building.

THE RAILWAY CLUB OF PITTSBURGH will hold its next meeting at Fort Pitt Hotel, Pittsburgh, on Thursday evening, January 24. There will be a paper by Dr. E. R. Weidlein, director of the Mellon Institute of Industrial Research, University of Pittsburgh, on Science in Industry. The meeting will be preceded by a dinner at the hotel at six o'clock.

FRANKLIN D. ROOSEVELT, the new governor of New York State, in his first message to the legislature, calling attention to the importance of eliminating grade crossings of highways and railroads, said that he was not satisfied either with the governmental machinery for dealing with this problem or with the attitude of some of the railroads. He believes that the state should encourage the establishment of air ports thus giving official recognition to air navigation as an established means of communication and transportation.

A. S. C. E. Elects Two Railway Men as Officers

At the annual meeting of the American Society of Civil Engineers, which convened on January 16, the following officers were elected to serve during the ensuing year: President, Anson Marston, Dean of Engineering, Iowa State College; vice-president zone two, Arthur J. Dyer, president of the Nashville Bridge Company; vice-president zone three, Alonzo J. Hammond, chief engineer of the Mellon-Stuart Company; Directors Ralph Budd, president of the Great Northern, Frank L. Nicholson, chief engineer of the Norfolk Southern, George H. Norton, chief engineer of the Grade Crossing and Terminal Station Commission of Buffalo, N. Y., Albert F. Reichmann, division engineer of the American Bridge Company, Clyde T. Morris, professor of structural engineering, Ohio State University, and Joseph Jacobs, consulting engineer.

Appropriation Recommended for Barge Line

A supplemental estimate by the Bureau of the Budget of appropriation for the War Department for the purchase of $10,000,000 additional capital stock of the Inland Waterways Corporation was transmitted to the House on January 9 by President Coolidge. The increase on the capital stock of the waterways corporation was provided for in the Denison bill, passed last year. The recommendation provides that of the amount appropriated $2,500,000 shall be immediately available and of the balance not more than $1,500,000 shall be withdrawn from the Treasury during the fiscal year 1930, not more than $3,000,000 during the fiscal year 1931, and not more than $3,000,000 during the fiscal year 1932. General T. Q. Ashburn, in testimony before a subcommittee of the House appropriations committee, explained that is is proposed to use the amounts available toward additional terminal facilities and equipment.

Recapture Hearings Ordered as to Three Large Systems

The Interstate Commerce Commission on January 16 announced that it had assigned for hearing, at a time and place to be hereafter fixed, proceedings for the ascertainment of the recapturable excess net railway operating income of the Atchison, Topeka & Santa Fe Railway System, the New York Central Lines, and the Southern Railway System for the applicable period of 1920 and the calendar years 1921 to 1927, inclusive. The orders issued, which were adopted by Division 1 of the commission on January 9, recite in each case that the companies comprised in the respective systems had filed consolidated reports setting forth the value of the property used by them and the net railway operating income received, in response to the orders of the commission issued each year In the Matter of the Recovery and Payment of Excess Railway Operating Income. It is ordered that "said matter, and particularly the matters set forth in said reports, as aforesaid, be and they are hereby, assigned for hearing at a time and place to be hereafter fixed, for the purpose of receiving evidence upon said matters."

These cases will involve consideration of the question as to whether the properties involved constitute railroads under common control and management and operated as a single system within the meaning of section 15a of the interstate commerce act, which provides for a consolidation of returns in such cases. The commission has heretofore assigned many cases involving the ascertainment of excess income for hearing but many of the hearings were postponed and in only one case, that of the St. Louis & O'Fallon now pending in the Supreme Court of the United States, has it issued an order stating the amount of recapturable income.

The Canadian Roads in November

Both for gross and net earnings November 1928, was the best November in the history of the Canadian Pacific, it was revealed in the statement of earnings and expenses for November and for the first eleven months of 1928. The November showing did not quite come up to the record figures of October, but, in the past, there has frequently been seen a decline in earnings in November from October.

The statement of earnings and expenses for the month of November, 1928, and for the first eleven months of the year, with comparisons, follows:

November

	1928	1927	Inc.
Gross	$24,358,668	$21,993,751	$2,364,917
Exp.	17,052,558	15,617,957	1,434,601
Net	7,306,109	6,375,793	930,316

Eleven Months

	1928	1927	Inc.
Gross	$207,947,199	$182,378,500	$25,568,699
Exp.	159,409,521	144,536,096	14,873,425
Net	48,537,678	37,842,404	10,695,273

Increases in gross and net earnings for the eleven months ending November 30, 1928, are shown in the financial statement of the Canadian National. The gross earnings for the eleven months of the current year amounted to $253,030,877 and in the corresponding eleven months of 1927 the gross earnings totalled $226,938,408, an increase for the eleven months of 1928 of $26,092,468, equivalent to 11.50 per cent.

Operating expenses for eleven months of 1928 amounted to $199,481,585, which compares with $185,478,701 for the cor-

responding eleven months of 1927, an increase of $14,002,884, equivalent to 7.55 per cent.

As a result the net earnings of the National System for the first eleven months of 1928 have reached the total of $53,549,291 and this sum compared with net earnings of $41,459,707 obtained during the similar eleven-month period of 1927, indicating an increase in net earnings for the eleven months of 1928 of $12,089,584, equivalent to 29.16 per cent.

These results show an operating ratio for eleven months of the present year of 78.84 per cent., while in the similar eleven-month period last year the operating ratio was 81.73 per cent.

During the month of November last the gross earnings amounted to $26,558,312 as against 24,131,101 in November, 1927, an increase of $2,427,210, or 10.06 per cent.

In November, 1928, operating expenses amounted to $19,419,131, in comparison with $17,258,347 in November, 1927, an increase of $2,160,782 or 12.52 per cent.

The net earnings in November last reached a total of $7,139,180 and in November, 1927, the net earnings amounted to $6,872,751, an increase in favor of November last of $266,428, or 3.88 per cent.

Railroad Calendar for 1929

Footing up their total gross earnings for the year 1927, the railroads of the country (considered as a whole) find that they have only four days' receipts left over as surplus, usable for permanent improvements or to create a reserve against years of poor business. This interesting way of showing the results of the year's operation is set forth in the fourth yearly railroad calendar of the Committee on Public Relations, of the Eastern Railroads, which has just been issued for 1929. This calendar is on a large placard, 27 x 42 in., lithographed in 11 colors. The lower part of it, omitting the decorative picture at the top, is reproduced on a small scale herewith.

The committee takes the gross receipts of the year and divides the amount by 365, making an average daily income; and of this gross income it finds that the receipts of 155 days had to be used for the payment of wages; 23 days for locomotive fuel, and so on, as shown in the table. The surplus, after paying 24 days' income to stockholders in dividends left only four days out of the 365 as available for surplus.

Items of Expenditure	1927	1926	1925	1924
Wages	155	151	153	157
Locomotive fuel	23	24	24	27
Materials and supplies	69	69	69	70
All other op. exp.	25	24	25	24
Taxes	22	22	21	21
Interest and rents	43	40	41	41
Dividends	24	23	20	19
Surplus	4	13	12	6

It will be seen that operating expenses increased over the preceding year by the receipts of five days; fixed charges increased three days and dividend disbursements one day; while the cost of fuel was one day less.

The committee (143 Liberty Street, New York City) will furnish copies of the calendar to applicants who are interested.

Canadian Branch Lines Controversy

Announcement has been made by both the Canadian Pacific and the Canadian National of their respective programs, on a three-year basis, of new branch-line construction in the Western provinces. The C. P. R. program, as now drafted, provides for the building of 1,200 miles of lines at an approximate cost of $60,000,000, while the Canadian National list shows a total of about 850 miles at an approximate cost of $45,000,000. As a good deal of the projected lines will be in the province of Saskatchewan there is bound to be considerable overlapping or duplication of service. Parliament at Ottawa on the two previous programs expressed itself as strongly opposed to overlapping and also to any attempt by either road to blanket territory or to pre-empt any particular district, so that it is practically certain that by the time the many bills finally emerge from Parliament early this summer there will be a considerable reduction in the two programs.

The most important of the proposed Canadian Pacific branch lines affect the far northern section of Saskatchewan. Details are lacking, but it is proposed, roughly, to build a line from Nipawin straight north to Island Falls, across Churchill river and farther north to Reindeer Lake. It is also possible that the Canadian Pacific will seek rights to branch off at Island Falls and cut through the mineralized areas of Flin Flon and Sherritt Gordon and tap the Hudson Bay Railway at a point well toward Churchill.

The complete program, as announced, is as follows:

From Fredenbury, Sask., to Esterhazy, Sask.; from Nipawin to Island Falls, Sask.; from Gronlid to Pontrilis, Alta.; from Sutherland to Melfort, Sask.; from Prince Albert to Foster Lake, Sask.; from a point near Prince Albert to one on the Alberta Great Waterways Railway near township 63; from a point on the Asquith branch, near township 39 to North Battleford, and thence to Meadow Lake; from Hazeldean to Golden Lake, Sask.; from a point near Chessfield in a westerly direction to one near township 28, west of the 5th meridian; from a point near Trail, B. C., to Metaline Falls; from McKim to Blazard, in the Sudbury district of Ontario.

Sir Henry Thornton, president of the Canadian National, has made known his intention to oppose certain of the C. P. R. projects which he believes would unfairly invade his territory. He said in part:

"Both the Canadian National Railways and the Canadian Pacific Railway have branch line programs which will come before Parliament this session. That of the Canadian National which has been in contemplation for several months, has been developed with a view of providing a maximum of transportation facilities and development at minimum expense. It is hoped that work will start on the Canadian National new lines early in the summer of the present year and continue through the next three seasons.

"Discussions are in progress between the two companies to determine what differences in the program may be composed. It is not probable that all of these differences will be adjusted, and certain contentious points will be submitted for the decision of Parliament through the Railway Committee.

"The Canadian National applauds the apparent intention of the Canadian Pacific

Railroad Calendar

Railway to assist in the development of the north country providing their assistance does not entail the exclusion of the Canadian National System from territory which it has already colonized or caused to be colonized and into which it has been well understood it intended to extend its lines in the immediate future. In this connection it should be mentioned that for more than twenty-five years the Canadian Northern and the Grand Trunk Pacific and recently their successor the Canadian National Railways have been extending their lines through the northern section of Canada."

Declaring that the branch-line program of his company offered no challenge to other company President E. W. Beatty of the Canadian Pacific this week issued a statement in reply to Sir Henry Thornton. President Beatty said in part:

"The branch line construction program of the Canadian Pacific will be based on the traffic necessities and the future prospects of the country, and will be governed by what we believe to be sound business principles. It constitutes no challenge to any other railway company, having been framed by our officers after careful examination of territory not now possessed of railway communication, and after proper appraisal of the areas affected. With respect to certain areas, in connection with which difference of opinion has arisen, no disposition to build was ever displayed by other railway companies until our plans became public property.

"If our proposals conflict with plans, conceived in the remote past or very recently, by the Canadian National, or by the promoters of railway projects subsequently acquired by the government, we are quite prepared to see each and every item subjected to the closest scrutiny by Parliament, confident that the ultimate decision of that body will be born of a desire to serve the best interests of the country and particuarly of the great undeveloped area in the Western provinces which lie north of the Saskatchewan River.

"In some press notices issued, the hope is expressed that our program and that of the Canadian National will not involve wasteful duplication of branch lines. The question of duplication need not enter this particular controversy, as two railway lines would not be justified in any of the areas over which there might be a difference of opinion. The question to be determined will be as to whether or not the Canadian Pacific will be permitted to build according to its program, or whether the territory will be reserved until the Canadian National is ready to provide for it

"In some quarters there has been revived the thought that the three prairie provinces should be divided into spheres of influence as far as the two railway companies are concerned. This is accompanied by the suggestion that Messrs. MacKenzie and Mann, and the Grand Trunk Pacific had filed a caveat covering all the northern portions of the provinces, and that the Canadian National as their successor is the only power authorized to release that caveat."

Traffic

A series of distance scales of rates on sand, gravel, crushed stone, shells and related commodities between points in the Southwest and for intrastate application to some extent in Louisiana is recommended to the Interstate Commerce Commission by Attorney-Examiner E. H. Watkins in a proposed report in part 11 of the commission's rate structure investigation.

The Missouri Pacific has applied to the Railroad Commission of Texas for authority to establish rates on merchandise shipped in steel containers, and loaded on container cars, between Galveston, Dallas, Ft. Worth, San Antonio, and Houston. The proposed rate is on the basis of 12 cents a mile for containers weighing up to 4,000 lb. and one half cent a mile more for each additional 500 lb.

Winter carnivals in New England, of which 30 or more are scheduled to take place in various places in Maine, New Hampshire, Vermont and Massachussetts between January 21 and February 24, are listed in a leaflet which has been issued by the Boston & Maine. In addition to these events, numerous entertainments of local interest are mentioned and the leaflet contains a list also of ten sport occasions in Canada within the dates mentioned.

The Public Service Commission of New York State announces that, at a hearing to be held in Albany on February 18, the Commission will institute a general investigation into class freight rates throughout the state. The commission says that it deems it its duty to take this action, relative to intra-state rates, concurrently with the investigation which is being made by the Interstate Commerce Commission of interstate rates in the same field.

The Alabama Public Service Commission has directed the Alabama Great Southern to come to terms with the Alabama, Tennessee & Northern on the division of certain freight rates between Birmingham and Mobile. The route is from Birmingham southerly to York, 125 miles over the A. G. S. and thence 147 miles southerly to Mobile over the A. T. & N. In September, last, the commission issued an order requiring the two roads to enter an arrangement for joint rates but the A. T. & N. complains that the A. G. S. will not accept a fair proportion.

The Southern Pacific's tri-weekly automobile baggage car service over the snow-covered Sierra summit between Sacramento, Cal., and Reno, which was established on December 26, has become so popular that it has been necessary to operate the car on a daily schedule. The automobile baggage car will be operated for the remainder of the winter. The charge for checking motor cars as baggage between Sacramento and Reno is approximately 10 cents a mile.

The Illinois Manufacturers' Association has asked the governor-elect of Illinois, Louis L. Emmerson, to urge prompt action to complete the Illinois waterway declaring that competition from eastern concerns shipping through the Panama Canal is assuming an alarming aspect not only for Illinois but for the entire Mississippi valley. The message stated that it costs more to send a carload of manufactured products from Illinois to California by rail than it does to ship by rail from Illinois to Baltimore and by boat to the Pacific coast.

Record Car Loadings at Chicago

The Chicago district, in 1928 established a new high record in car loadings when 2,745,079 cars were loaded, according to figures compiled by the Chicago Association of Commerce. This exceeds all past annual records by more than 100,000 car loads. The months showing exceptional increases were: February which, with 218,512 cars, exceeded the monthly loadings in 1927 by more than 23,000 cars; August which, with its 244,517 cars, was better by nearly 7,000 cars than the monthly record set up in 1926; and October which with 255,728 cars, went over the previous figure in 1926 by more than 17,000 cars.

Chicago Union Station Mail Conveyors

The Chicago Union Station Company has installed a conveyor to move mail to and from the Van Buren mail terminal building only 400 ft. south of the concourse of the station. All mail coming into the station in "head ends," or less-than-carload lots, is trucked by tractors from the cars, down the ramps, through the basement and placed on a moving belt. This belt is 1,100 ft. long. The new conveyor system has cut in half the distance the mail has to be trucked and saves about 247 truck miles a day.

The Van Buren mail terminal has in service 750 trucks, 21 electric tractors, and five gas tractors. Nearly 300 men are employed. This terminal receives mail daily from 68 trains and dispatches to 66 trains, some of the dispatches filling as much as six or seven cars. This station handles approximately 75,000 sacks each 24 hours, a total of 2,000,000 sacks a month, or 40,000 tons.

Georgia Peach Rate Decision Affirmed

Upon reargument the Interstate Commerce Commission has affirmed its former findings in the Georgia peach rate case, in which it ordered a revision under the Hoch-Smith resolution on rates on peaches from the southeastern states including reductions and increases. The Georgia peach-growers had asked a reopening of the case on the ground that while rates from the Carolinas were reduced the effect of the commission's order was to increase their rates by approximately $84,580 a year. In the re-

port on reargument the commission states that its best judgment is that the prescribed basis will not result in any decided reduction in the aggregate transportation charges on shipments from Georgia and in view of the existing level it was so intended. It may possibly result in a very slight increase, the report says, but unquestionably the prescribed basis results in a material reduction from the Carolinas and on the aggregate movement from the Carolinas and Georgia. In reply to contentions that the commission failed to comply with the requirements of the Hoch-Smith resolution the report says: "The consequences of errors of judgment or of the failure to take needed corrective measures in an industry cannot justly be made the ground for demanding reductions in freight rates."

Commissioners Campbell, Lewis and Porter dissented.

National Chamber Opposes Surcharge Bill

Opposition to the Robinson bill to repeal the Pullman surcharge, as a departure from the precedents established by Congress in relation to rate-making, is voiced in a communication addressed to members of the Senate by William Butterworth, president of the Chamber of Commerce of the United States.

The National Chamber, as determined by a referendum vote of its membership, holds that Congress should follow its usual course of entrusting rate making to the Interstate Commerce Commission. To obtain efficient service says Mr. Butterworth rates must be fair not only to the owner of railroad securities and to railroad workers, but fair as well to the shipper and the public, and the highly important rate making function of the Interstate Commerce Commission should not be abridged.

"In the laws passed since 1887," it is stated in explanation of the National Chamber's position, "Congress has closely adhered to the principle of regulating carriers through an administrative commission, thus recognizing that the regulation of railroads and other carriers is an intricate problem requiring the experience and skilled judgment of such an agency. Successful regulation can only come about as a result of continuity of policy in the development and enforcement of such regulation." The Chamber expresses no opinion with regard to the merits of the Pullman surcharge itself.

Oranges Transported Long Distances

The United States is the leading orange producing nation of the world, the average annual production being approximately 34,000,000 boxes, according to a study just completed by the Bureau of Railway Economics.

California accounts for 67 per cent of the total; Florida produces 32 per cent, and five other states—Alabama, Arizona, Louisiana, Mississippi and Texas—together account for the remaining one per cent.

More than 72,000 carloads of oranges were shipped out of the producing areas during the year ended on September 30, 1927, while of that total more than 50,700 cars were unloaded in 66 important markets; of which 73 per cent went to 31 markets east of the Mississippi river and north of the Ohio, and the southern border of Pennsylvania. To reach the 66 markets, approximately 58 per cent of the total unloads traveled distances ranging from 2,000 to 3,500 miles; and 34 per cent traveled from 1,000 to 2,000 miles. Freight rates exert no restrictive influence in the distribution of oranges. Prices varied periodically in all phases of the marketing process. In the four largest consuming markets—New York, Boston, Philadelphia, and Chicago—large daily, weekly, monthly and seasonal variations in prices of oranges occurred. These variations were usually many times the freight rates from producing area to market. The margin between the average wholesale price in the consuming market and retail price during the 1926-27 season, was for Florida oranges four times the margin between the wholesale price and the price f.o.b. producing area and for California oranges, two and one-half times as great.

Freight Traffic in November

The volume of freight handled by the Class I railroads in November, 1928, amounted to 41,964,905,000 net ton-miles, according to reports compiled by the Bureau of Railway Economics. This was an increase of 4,714,583,000 net ton-miles, or 12.7 per cent over the total for November, 1927, but a decrease of 3.2 per cent under that for the same month in 1926.

In the Eastern district, there was an increase of 18 per cent, in the Southern 6 per cent and in the Western 8.3 per cent.

For the first eleven months of 1928, the total was 439,349,242,000 net ton-miles, a decrease of two-tenths of one per cent below the corresponding period in 1927 and a decrease of 2.1 per cent below the same period in 1926. Railroads in the Eastern district for the eleven months in 1928 reported a decrease of 2.5 per cent, while the Southern district reported a decrease of 6.3 per cent. The Western district reported an increase of 5.4 per cent.

For the eleven months the daily average movement per freight car was 31.4 miles, the highest for any corresponding period on record and an increase of approximately 2.6 per cent over the corresponding period in 1927. It also was an increase of 0.8 mile over that for the same period in 1927 and an increase of 0.9 mile over that for the corresponding period in 1926.

The average in November was 33.3 miles, the highest for any November on record and an increase of 3.1 miles over that for November 1927. It also was an increase of 1.2 miles over that for November 1926.

The average load per car in November was 27.5 tons, an increase of seven-tenths of one ton over the average for November 1927. For the first eleven months in 1928, the average load per car was 26.7 tons, compared with 27.2 tons for the same period in 1927 or a decrease of one-half of a ton.

Equipment and Supplies

Freight Cars

THE LAKE CHAMPLAIN & MORIAH is inquiring for 20 ore car bodies.

THE WESTERN UNION TELEGRAPH COMPANY is inquiring for five steel underframes for box cars.

THE SEABOARD AIR LINE is inquiring for 500 plain box car bodies, of 45 tons' capacity.

THE AMERICAN SMELTING & REFINING COMPANY is inquiring for 25 gondola cars.

THE CHILE EXPLORATION COMPANY is inquiring for 80 ore cars of 70 tons' capacity.

THE ATCHISON, TOPEKA AND SANTA FE has ordered one hundred fifty sulphur cars of seventy tons capacity from the American Car & Foundry Company.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA have ordered 25 stock cars of 25 tons' capacity from the Gregg Company. Inquiry for this equipment was reported in the *Railway Age* of December 15.

THE WESTERN FRUIT EXPRESS has ordered 800 steel underframes from the Siems-Stembel Company. Inquiry for this equipment was reported in the *Railway Age* of December 22.

THE PERE MARQUETTE is inquiring for 100 ballast cars of 50 tons' capacity. This is in addition to its inquiry for 1,400 cars reported in the *Railway Age* of January 12.

THE ATCHISON, TOPEKA & SANTA FE has placed orders for the following cars:

500 box cars of 50 tons' capacity from the Pressed Steel Car Company
500 box cars of 50 tons' capacity from the Pullman Car & Manufacturing Corporation
700 box cars of 50 tons' capacity from the General American Car Company
300 box cars of 50 tons' capacity from the American Car & Foundry Company
425 gondola cars of 50 tons' capacity from the American Car & Foundry Company
250 mill type gondola cars of 70 tons' capacity from the Standard Steel Car Company

Inquiry for this equipment was reported in the *Railway Age* of December 15.

Passenger Cars

THE LONG ISLAND will buy, in the near future, about 40 multiple unit motor cars, for suburban service.

THE LOUISVILLE & NASHVILLE is inquiring for four coaches, 70 ft. long, four coaches with end smoking compartments, 70 ft. long, four vestibule passenger and baggage cars and six passenger and baggage cars.

THE CHICAGO & NORTH WESTERN has ordered 10 all steel baggage cars, 70-ft.

long from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of December 15.

THE ILLINOIS CENTRAL is inquiring for six combination mail cars, five baggage and express cars, five horse express cars, ten coaches and eight chair cars. Authorization for this equipment was reported in the *Railway Age* of December 29.

THE NORFOLK & WESTERN has ordered from the Bethlehem Steel Company 10 all steel baggage and express cars, and five all steel baggage and mail cars. Inquiry for this equipment was reported in the *Railway Age* of December 22.

THE NEW YORK CENTRAL has placed an order with the Railway Locomotor Company, Chicago, for a high pressure steam motor car equipped with a 450-hp. Locomotor power plant of the International Harvester type. The car is designed to handle two or three trailers. This type of car was described in the *Railway Age* of October 15, 1927.

Iron and Steel

THE KANSAS CITY SOUTHERN has ordered 1,100 tons of structural steel for miscellaneous bridge work from the Kansas City Structural Steel Company.

Signaling

THE CHICAGO, BURLINGTON & QUINCY has ordered, from the Union Switch & Signal Company, material for the installation of dispatcher control on its line from Greenwood, Neb., west to Waverly, five miles. This line is now operated by means of a controlled manual block signal system. The new machine will be placed at Ashland, 7 miles east of Greenwood. By it will be operated three single switch locations and one cross-over. The order includes five switch layouts, Model M-20, dual control; five color-light dwarf signals, and other material.

Machinery and Tools

THE CHICAGO & NORTH WESTERN is inquiring for a small pipe machine.

THE BOSTON & MAINE has ordered five 10-ton gasoline-driven, crawler-tread cranes from the Link Belt Company.

THE UNION PACIFIC is inquiring for one universal grinder, a shears, a small pipe machine and welding equipment.

THE MISSOURI PACIFIC has ordered two 25-ton locomotive cranes and one 150-ton wrecking crane from the Industrial Brownhoist Corporation.

THE MISSOURI-KANSAS-TEXAS has ordered from Manning, Maxwell & Moore, Inc., one Doelger & Kirsten No. 4 all-steel, motor driven, alligator shear, for its Parsons, Kan. shops.

Supply Trade

James K. Dickey has been appointed secretary of the **Burnside Steel Foundry Company**, Chicago.

W. B. Gillies, district manager of the **Youngstown Sheet & Tube Company**, with headquarters at Chicago, has been appointed assistant to vice-president with headquarters at Youngstown, Ohio.

Allen W. Morton, vice-president of the **American Hammered Piston Ring Company**, has been elected president and general manager to succeed **W. C. Stettinus**, who has been elected vice-chairman of the board.

Andrew Wells Robertson, of Pittsburgh, Pa., has been elected chairman of the board of directors of the **Westinghouse Electric & Manufacturing Company**, to succeed the late Guy E. Tripp.

George F. Emanuels has been appointed Pacific Coast sales manager of the **Republic Iron & Steel Company**, with headquarters at San Francisco, Cal., to succeed **Arthur G. Brown**, who has resigned to enter the employ of the **United States Steel Products Company**, San Francisco.

T. F. Going, sales representative of the railroad division of the **Prime Manufacturing Company**, has been appointed manager of this division. He entered the railroad supply business in 1922 as a representative of the Garlock Packing Company, with headquarters at St. Louis, after which he took charge of sales for the Louisville Frog & Switch Company at Louisville, Ky. In 1926 he left that industry for other fields, but in May, 1927, became sales representative of the Prime Manufacturing Company, which position he has held until his recent promotion.

The Milburn Sales Corporation and the **Milburn Paint Spray Corporation** were incorporated on December 31, 1928, under the laws of the State of Maryland, to carry on the sale of a number of the products manufactured by **The Alexander Milburn Company**, Baltimore, Md. **Alexander F. Jenkins**, is president and treasurer, and **Edward P. Boyer** is vice-president, of both companies, **Louis J. Herzog**, is secretary of the Milburn Sales Corporation and **Robert M. Zimmermann** is secretary of the Milburn Paint Spray Corporation.

The Timken Steel & Tube Company, Canton, Ohio, has completed construction work on its new mill and has started on a full capacity production schedule. The plant has a capacity of 30,000 tons of high grade alloy steel a month. The company has also put into effect an expansion program for 1929 that will necessitate expenditures of about $1,000,000; 200 acres of land have been purchased, west of the company's present holdings and work has already been started on a tube mill, which will be in a building 320 ft. wide by 420 ft. long, to cost over $500,000 for building and equipment. This mill is expected to be completed and put into operation by April 1.

The following transfers and promotions in the general railroad and government department of the **Johns-Manville Corporation** have been made: **Carl S. Clingman**, of the St. Louis district, has been promoted and transferred to New York general headquarters, as assistant general sales manager of the railroad and government department; **A. C. Pickett**, special railroad representative, has been transferred from Houston, Tex., to the St. Louis district, vice Mr. Clingman; **D. B. Bell**, special representative, has been transferred from St. Louis district to Houston, Tex., vice Mr. Pickett, and **Elliot Fairback** has joined the staff as special representative in the St. Louis district, vice Mr. Bell.

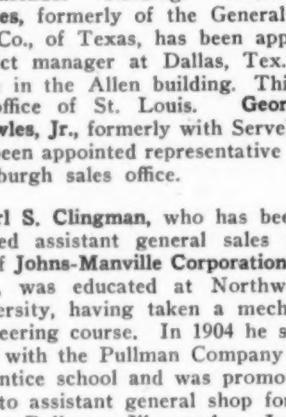
The Fairbanks, Morse Water Supply Company, Chicago, has been organized by **Fairbanks, Morse & Company** to provide water supplies for railroads, industries and municipalities. **P. D. Bowler**, formerly president and general manager of Layne and Bowler Corporation has been elected vice-president and general manager of the new company and will be assisted by water service engineers. The new company will make investigations of water sources for railroads and will agree to deliver a definite quantity and quality of water at a definite price per thousand gallons through facilities which it will furnish at its own expense, these facilities to revert to the railroad without charge after a period of years.

William Bager, vice-president in charge of engineering and manufacturing for the **Bucyrus-Erie Company**, South Milwaukee, Wis., has also been placed in charge of domestic sales. **J. G. Miller**, assistant to the senior vice-president has been appointed manager of domestic sales under Mr. Bager. Four assistant sales managers have been named as follows: **P. H. Birckhead**, who was in charge of sales of large units; **J. A. Garber**, who was in charge of small units; **M. F. Keise**, who was commercial engineer in charge of dredges; and **M. J. Woodhull**, who was district manager of the central sales office.

C. J. Marsh, vice-president and manager of the New York sales office of the Standard division of the **Standard Underground Cable Company**, has been transferred to the staff of the **General Cable Corporation**, the parent company, to supervise the purchase of metals. **R. S. Hopkins**, assistant manager, has been promoted to manager of the New York office and will be succeeded by **O. G. Miller**. The Atlanta, Ga., office formerly a branch of the Washington, D. C., office, has been made a main branch sales office of which **E. B. Hook, Jr.**, has been appointed manager and **J. A. Peacock**, district manager. New district sales offices, reporting to the

Atlanta office, have been opened in Birmingham, Ala., and Charlotte, N. C., with **M. L. Tice** and **W. D. Hampton** as district managers, respectively. The Atlanta office has been moved from the Candler building to the Healey building. The Birmingham office is located in the Watts building and the Charlotte office in the First National Bank building. **H. C. Richardson,** has been advanced to manager of the Washington office to succeed **Edward Kerschner,** who was transferred to the Chicago office last August as manager of that territory. The Chicago office has been moved from the Conway building to the Bankers building. **E. J. Pietzcker,** formerly manager of both the Chicago and St. Louis offices, is now devoting his entire time to the St. Louis office, which has been moved from the Arcade building to the Ambassador building. **Arthur Z. Barnes,** formerly of the General Electric Co., of Texas, has been appointed district manager at Dallas, Tex., with office in the Allen building. This is a sub-office of St. Louis. **George C. Knowles, Jr.,** formerly with Servel, Inc., has been appointed representative in the Pittsburgh sales office.

Carl S. Clingman, who has been appointed assistant general sales manager of **Johns-Manville Corporation,** New York, was educated at Northwestern University, having taken a mechanical engineering course. In 1904 he started work with the Pullman Company in its apprentice school and was promoted in 1907 to assistant general shop foreman at the Pullman, Ill., works. In 1908 he was transferred to Wilmington, Del., as eastern mechanical inspector; in 1910 he returned to the Pullman Manufacturing Company, at Pullman Works, as a mechanical inspector. The following year he was promoted to general



Carl S. Clingman

mechanical inspector with office in the Pullman building, Chicago. Mr. Clingman entered the service of the Johns-Manville Corporation in 1917 as sales engineer in the Southwest. In 1927 he was promoted to assistant district sales manager at St. Louis, which position he held until January 1, when he was appointed assistant general sales manager, at New York, to assist George A. Nicol, Jr., vice-president.

John R. Sexton, manager of the railroad department of the **H. H. Robertson Company,** Pittsburgh, Pa., has resigned to become associated with the **Stone & Webster Engineering Corporation,** which has long specialized in the design and construction of hydro-electric and steam power work and now plans to extend and enlarge its operations in the railway field. His headquarters will be at 120 Broadway, New York City. Mr. Sexton was born at Long Branch, N. J., in 1889. He graduated in civil engineering from Rutgers College in 1911 and first entered railway service as a rodman on the Lehigh Valley in the summer of 1910. From August 1, 1911, to October 13, 1913, he was employed with the New York Central as a chainman, rodman, instrumentman and inspector at Poughkeepsie, N. Y. He then went with the Erie as resident engineer on construction and two years later was promoted to assistant division engineer with headquarters at Youngstown, Ohio. In 1916 he was promoted to division engineer at Mead-

John R. Sexton

ville, Pa., and was later transferred to Huntington, Ind. In 1920, he was promoted to regional engineer of the Chicago region of the Erie with headquarters at Chicago. He left railway service on April 15, 1923, to go with the H. H. Robertson Company, Pittsburgh, Pa., as manager of railway sales with headquarters at Chicago. On November 1, 1923, he was promoted to manager of railway sales and district manager at Chicago and on April 21, 1925, he was made manager of the railroad department with headquarters at Chicago and Pittsburgh, which position he held until January 1, 1929, when he resigned to go with the Stone & Webster organization.

Robert M. Gates, manager of the industrial department of **The Superheater Company,** New York, has been elected vice-president. Mr. Gates affiliated himself with The Superheater Company in 1922, and has since been actively engaged in directing the engineering and sales of Elesco superheaters for stationary power plants and special pipe coils, for the oil and other industries. Mr. Gates is a native of Iowa. Following his graduation from the School of Engineering, Purdue University, in 1907, he served as a special apprentice on the Pennsylvania and with the Browning Engineering Company of Cleveland, **Ohio, until 1910. The next** few years he had his own engineering office in Cleveland and later was associated with the Thew Shovel Company, Lorain, Ohio, following which he was manager

Robert M. Gates

of the Lakewood Engineering Company, Cleveland. He has taken a prominent part in the activities of the American Society of Mechanical Engineers. For the past two years he has been chairman of the Committee on Meetings and Programs, and at the last general election he was made a member of the council of that society.

Obituary

John McEwen Ames, died suddenly at his home in Arkansas City, Kan., on January 6, at the age of 62. Mr. Ames was connected with the American Car & Foundry Company as mechanical engineer from the date of its organization. He retired from the company in 1915 to take charge of the Kanotex Refining Company, and he was president of that company at the time of his death.

Trade Publication

THE GAS-ELECTRIC RAIL CAR.—This is the title of a 24-page illustrated booklet recently issued by the General Electric Company, Schenectady, N. Y. Photographs of gas-electric cars are shown together with illustrations of the electrical equipment which is used for their operation. Train resistance curves for these cars are given as well as characteristic curves for both car and motor. Of special interest is a number of tables showing the comparative cost of gas-electric and steam equipment.

Construction

ALGOMA CENTRAL & HUDSON BAY.—This company closes bids on January 21 for the construction of a concrete and steel coal dock and bridge at Michipicoten, Ont., which it is estimated will require the expenditure of about $450,000.

ATCHISON, TOPEKA & SANTA FE.—A contract has been let to the List & Bagwell Construction Company, Kansas City, Mo., for the construction of three miles of new main line at Topeka, Kan. The cut-off will effect a reduction in grades and the elimination of a number of street grade crossings. The project involves the construction of four grade separation structures.

BESSEMER & LAKE ERIE.—This road has authorized the construction of a 48-ft. extension to its two-story store house at Greenville, Pa. The extension will be built of re-inforced concrete and will cost approximately $35,000.

CANADIAN PACIFIC.—A contract for the remodelling of 109 guest rooms at the Empress Hotel, Victoria, B. C., has been let to David W. Burnett, Victoria, at a cost of about $115,000. This work includes the addition of a bath room to each of the guest rooms.

COLORADO & SOUTHERN.—A contract has been let to the Roberts & Schaefer Company, Chicago, for the construction of a 150-ton capacity, three track automatic electric reinforced concrete coaling station at Walsenburg, Colo.

DELAWARE, LACKAWANNA & WESTERN.—This company has awarded a contract to the Turner Construction Company, Buffalo, N. Y., for the rebuilding of its docks and lake freight house at Buffalo, N. Y. A contract also has been given to Foley Brothers, Inc., for the construction of a new pier at its Jersey City, N. J., terminal.

MISSOURI PACIFIC.—A contract has been let to A. Guthrie & Co., St. Paul, Minn., for the construction of 15 miles of second main track south of Newport, Ark. This project also involves the raising of a portion of the existing track.

SOUTHERN PACIFIC.—Bids will close on February 16 for the construction of the superstructure and foundation of the proposed bridge over Suisun bay between Martinez, Cal., and Army Point.

ST. LOUIS ELECTRIC TERMINAL. — The Interstate Commerce Commission has authorized this company, with its lessee the Illinois Terminal, to construct a 2.6-mile extension from the west end of McKinley bridge, St. Louis; estimated cost $4,972,950. This estimate includes a new station and office building.

SOUTHERN PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a branch line from Knights Landing to a point near Boyer's Landing, Cal., 13.8 miles.

SOUTH PLAINS & SANTA FE.—This company has applied to the Interstate Commerce Commission for a certificate for the construction of a branch line from a point near the Texas-New Mexico state line to Lovington, N. M., 20.5 miles.

ST. LOUIS — SAN FRANCISCO — GULF, TEXAS & WESTERN.—Following the announcement of the proposed purchase of the G. T. & W. by the Frisco, subject to the approval of the Interstate Commerce Commission, the attorney general of Texas, on January 8, approved an amendment to the charter of the Frisco which permits the construction of an extension from Vernon, Tex., to Seymour, 42 miles. The G. T. & W. charter was amended to provide for the construction of an extension from Seymour to the Quanah, Acme & Pacific at Paducah, 70 miles.

Contracts Signed for New $25,000,000 Pennsylvania Station In Newark

With the signing of contracts on January 9 at the City Hall, Newark, N. J., by city officers, representatives of the Pennsylvania, the Public Service Corporation and the United New Jersey Railroad & Canal Company, negotiations which involve the erection of the new $25,000,000 Pennsylvania station near the present Market street station in that city, the extension of the Hudson & Manhattan tubes to Parkhurst street and the construction of a city railway in the old Morris canal bed were completed.

The signing of the contracts culminates negotiations which have been under way for a period of approximately five years and brings nearer to realization the project which has been planned for the solution of traffic congestion between Newark and New York City. This will make the Market street station, Newark, the P. R. R.'s transfer point for downtown New York, doing away with the present Manhattan transfer.

The station will have eight tracks, six for the Pennsylvania trains and two for rapid transit lines, and six platforms. Seven of the tracks and five of the platforms will be placed approximately at the level of the present tracks, while one track and one platform will be constructed 18 feet above the present level for westbound rapid transit trains.

Work will begin on the project within three months with the laying of the foundations for three new bridges which are to be built by the railroad to replace the present one which crosses the Passaic river.

It has been estimated that the expenditure by the railroad will be about $12,500,000 while the city will spend approximately $7,000,000 on the station and $5,500,000 in connection with the trolley line and boulevard. Additional details of the project were published in the *Railway Age* issue of May 12, 1928.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $1,876,000 of general mortgage 4 per cent gold bonds to reimburse the treasury for capital expenditures. The railroad wishes to sell these bonds, as well as $2,132,000 similar bonds now held in its treasury, but the commission has deferred action until definite arrangements for their sale have been made.

CHICAGO & EASTERN ILLINOIS.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability with respect to $562,000 of equipment trust certificates, series B, to be dated December 1, 1928, and to mature in equal installments between 1930 and 1943 inclusive. The certificates will bear interest at 5 per cent and have been sold to the highest of 13 bidders—Halsey, Stuart & Co., at 99.51, which will bring the cost of the funds to the railroads to 5.078 per cent.

CHICAGO & NORTH WESTERN.—*New Director.*—John Stuart, president of the Quaker Oats Company, has been elected a director of this company succeeding the late Chauncey M. Depew.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability with respect to $690,000 equipment trust of 1917 certificates, series G, to mature in annual installments up to 1939 and to bear interest at the rate of 4¾ per cent. The issue has been sold under competitive bidding to Halsey, Stuart & Co., at 98.46 and accrued interest, which will make the cost to the railroad 5.085 per cent.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*New Director.*—Marshall Field has been elected a director of this company succeeding the late Chauncey M. Depew.

DELAWARE & HUDSON.—*Segregation of Properties Proposed.*—Approval by the Interstate Commerce Commission of a plan for the segregation of this company's properties by a transfer to a new company, the Delaware & Hudson Railroad Corporation, of the railroad owned or operated by it and its properties operated in conjunction therewith, together with stock in subsidiary or affiliated operating railroads and water carriers, is asked in a joint application filed with the commission by the two companies. The Delaware & Hudson Company asks authority to abandon its general railroad property and the operation thereof but proposes to retain its interest in electric railways not operated as part of its general steam railroad system, railroads located in Quebec, property leased to the New York, Ontario &

Western, and other properties not specifically mentioned as to be transferred, including anthracite coal properties. Authority is also asked for the acquisition of control either under lease or by purchase of stock by the railroad company and for the issuance of 773,610 shares of stock without par value, of which 515,740 are to be common stock; also for members of the board of managers and officers of the D. & H. Company to serve as directors or officers of the new company.

JACKSONVILLE & HAVANA.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue not exceeding $300,000 of first and prior lien mortgage 20-year 6 per cent bonds dated July 1, 1926. These bonds will be issued in exchange for similar bonds improperly issued under a previous authorization of the commission which set their date as May 1, 1926.

LONG ISLAND. — *Abandonment.* — This company has applied to the Interstate Commerce Commission for authority to abandon that portion of its Whitestone branch from the west bank of the Flushing river to Whitestone Landing N. Y. 4.1 miles, stating that with the extension of the city's rapid transit system and the inauguration of bus lines, the passenger business on the branch has rapidly fallen off and the branch is operated at a deficit.

OREGON, PACIFIC & EASTERN.—*Acquisition and Operation of Branch.*—The Interstate Commerce Commission has authorized this company to operate under lease 6,000 ft. of line from Bed Rock, Ore., to a damsite where a lumber mill is located.

OREGON SHORT LINE.—*Trackage Right.*—The Interstate Commerce Commission has authorized this company to operate jointly with the Western Pacific over a 1.2-mile line being built by the latter company at Wells, Nev.

PENNSYLVANIA.—*Stock Increase.*—The directors of this company will submit a proposal to stockholders to raise the authorized capital stock of this company by $100,000,000,000.

PERE MARQUETTE.—*Joint Use of Industrial Track.*—The Muskegon Railway & Navigation complained to the Interstate Commerce Commission of the refusal of the Pere Marquette to renew a lease under which the Muskegon line operated a spur track in Muskegon, Mich., owned by the Pere Marquette. The commission held that the Muskegon line should be allowed to operate over this spur as a bridge line, but that industries on the line might be served exclusively by the Pere Marquette provided it gives adequate and impartial service.

READING—*Authorized to Acquire Control of Subsidiaries by Operating Contracts.*—The Interstate Commerce Commisson has authorized this company to acquire under operating contracts control of the following subsidiary railroads: Catasauqua & Fogelsville, the Gettysburg & Harrisburg, the North East Pennsylvania, the Perkiomen, the Philadelphia & Chester Valley, the Philadelphia, Newtown & New York, the Pickering Valley, the Reading & Columbia, the Reading, Marietta & Hanover, the Stony Creek and the Williams Valley. The Reading now operates these railroads, which it controls by majority stock ownership, but separate accounting records for each have to be kept. The new arrangement will simplify accounting and reduce expense.

SOUTHERN.—*Control of Mobile & Ohio Attacked.*—A petition has been filed with the Interstate Commerce Commission by John H. Jones, a citizen of Alabama, asking the commission to institute anti-trust proceedings against the Southern because of its control of the Mobile & Ohio under section 7 of the Clayton law and to require the Southern to divest itself of stock of the M. & O.

ST. LOUIS SOUTHWESTERN.—*Acquisition of Short Lines.*—Examiner Thomas F. Sullivan of the Interstate Commerce Commission has recommended in a proposed report that the commission approve this company's application for authority to acquire control by stock purchase of the Gideon & North Island, the Deering Southwestern and the Blytheville, Leachville & Arkansas Southern, and for the construction of 31 miles of line connecting them. He recommended, however, denial of the application for authority to issue $830,000 of capital stock for the purpose, saying the company should pay cash for the stock of the three companies, $80,000 for that of the G. & N. I., $350,000 for that of the Deering Southwestern, and $400,000 for that of the B. L. & A. S.

WABASH.—*Cancels Dividend.*—The directors of this company have cancelled the dividend of five per cent announced for February 6, on its class B preferred stock following the federal court decision on the class A stock as noted in these columns in the issue of January 12.

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Chestnut Ridge	$362,400	1918
Wilmington Ry. Bridge Co.	322,500	1917
Salt Lake City Union Depot & R. R. Co.	1,059,000	1919

Dividends Declared

Interstate Railways.—Common, $.17½, quarterly, payable February 1 to holders of record January 21.

Nashville, Chattanooga & St. Louis.—$3.50, semi-annually, payable February 1 to holders of record January 19.*

Pullman, Inc.—$1.00, quarterly, payable February 15 to holders of record January 24.

Wabash.—Preferred, Class A, $1.25, quarterly, payable February 25 to holders of record January 25.

* Correction.

Average Prices of Stocks and of Bonds

	Jan. 15	Last week	Last year
Average price of 20 representative railway stocks.	130.43	130.55	119.09
Average price of 20 representative railway bonds..	92.59	92.99	97.42

Officers

Executive

H. M. Sims has been appointed executive assistant of the Great Northern, with headquarters at St. Paul, Minn.

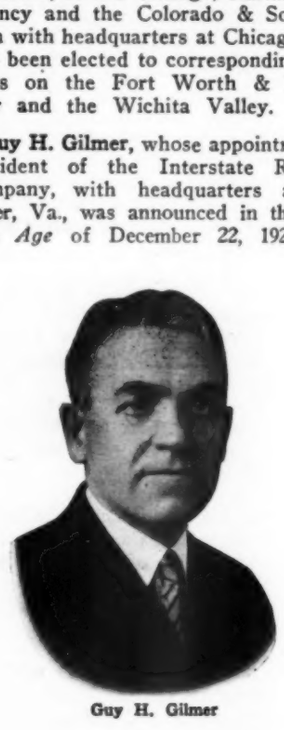
H. H. Hampton has been elected vice-president of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio.

A. J. Hancock, assistant to the general manager of the Southern Pacific, has been promoted to assistant to the vice-president, with headquarters as before at San Francisco, Cal.

H. Burgess, second vice-president of the Panama Railroad, has been elected president, with headquarters as before at Balboa Heights, C. Z. **J. L. Schley** has been elected second vice-president, succeeding Mr. Burgess.

Frederic E. Williamson, president, and **Conrad E. Spens,** executive vice-president, of the Chicago, Burlington & Quincy and the Colorado & Southern, both with headquarters at Chicago, have also been elected to corresponding positions on the Fort Worth & Denver City and the Wichita Valley.

Guy H. Gilmer, whose appointment as president of the Interstate Railroad Company, with headquarters at Andover, Va., was announced in the *Railway Age* of December 22, 1928, was



Guy H. Gilmer

born on March 13, 1883, in Turkey Cove, Lee County, Va. He was educated in the public schools and entered the service of the Norfolk & Southern on April 10, 1897, as call boy at Roanoke, Va. He was later promoted to the position of chief call boy, subsequently serving as yard clerk, station master, and assistant yardmaster at the West Roanoke Yard. In August, 1906, he was appointed joint yardmaster for the Norfolk & Western and the Southern. He was appointed assistant trainmaster of the

Radford division of the Norfolk & Western in January, 1918, and in August of the same year he was transferred in the same capacity to the Pocahontas division of the same road. Mr. Gilmer was appointed superintendent of the Interstate Railroad Company at Andover, Va., in September, 1918, and in May, 1924, he was promoted to the position of general manager, serving in that capacity until December 6, 1928, when his appointment as president of that road became effective.

Financial, Legal and Accounting

D. F. Donovan has been appointed general attorney of the Duluth, Missabe & Northern, with headquarters at Duluth, Minn.

W. J. Spaulding has been appointed assistant auditor and treasurer of the Frankfort & Cincinnati, with headquarters at Frankfort, Ky., succeeding **E. R. Boggs**, resigned.

P. J. Urquhart, auditor of the Alton & Southern, has been promoted to comptroller, with headquarters as before at Pittsburgh, Pa. **James Davies** has been appointed general auditor, with headquarters at Pittsburgh.

H. L. Stuntz, who has been appointed comptroller of the Chicago & Alton, with headquarters at Chicago, has been in railway service for more than 38 years. He was born on November 8, 1866, at Monroe, Wis., and spent his early days on a farm near Marshalltown, Iowa, entering railroad service on April 8, 1887, as a bill clerk in the local freight office of the Iowa Central (now part of the Minneapolis & St. Louis) at the latter point. From 1889 to 1892 Mr.

H. L. Stuntz

Stuntz was engaged in private business, returning to the Iowa Central in the accounting department. When the Iowa Central was merged with the M. & St. L. in April, 1902, he was appointed chief clerk of the accounting department at Minneapolis, Minn. In June, 1903, he entered the general offices of the Chicago, Rock Island & Pacific and two months later was advanced to chief clerk to the auditor of disbursements, where he remained until May, 1905, when he became connected with the Isthmian Canal Commission at Washington, D. C. He was sent to Panama during 1905 as a representative of the general auditor of the Canal Commission and in March, 1908, he was appointed local auditor of the Panama Railroad at Colon, C. Z. Mr. Stuntz returned to the United States as auditor of disbursements of the Illinois Central at Chicago in April, 1911, where he remained until December of the next year when he was appointed auditor of the Peoria & Pekin Union at Peoria, Ill. During federal control he acted as assistant to the federal manager of the C. & A., the P. & P. U. and the Chicago, Peoria & St. Louis (now the Chicago, Springfield & St. Louis) and on March 1, 1920, he was appointed assistant to the president of the Alton at Chicago. This title was changed to assistant to the receivers on August 1, 1922. Mr. Stuntz's promotion to comptroller became effective on January 1.

Operating

C. J. Birch has been appointed acting superintendent of the Duluth, Missabe & Northern, with headquarters at Procter, Minn., succeeding **J. W. Kreitter**, resigned.

O. H. Carper has been appointed assistant to the general superintendent of transportation of the Chesapeake & Ohio, with headquarters at Richmond, Va.

H. J. Wade has been appointed assistant trainmaster on the Kansas City Terminal division of the Missouri Pacific, with headquarters at Kansas City, Mo.

W. T. Ennis, trainmaster of the Fourth sub-division and branches of the Idaho division of the Oregon Short Line, with headquarters at Nampa, Idaho, has been promoted to superintendent of the Pocatello (Idaho) terminal, in charge of both passenger and freight.

C. M. Winter, assistant to the general manager of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has taken over the work performed by **L. P. Green** as superintendent of safety. Mr. Green will devote his entire time to the position of advertising agent.

William E. Robinson, assistant superintendent of the Canadian National at Moncton, N. B., has been transferred in the same capacity to Campbellton, N. B., succeeding **J. D. MacNutt,** promoted. **E. A. Robertson,** chief clerk in the superintendent's office, with headquarters at Moncton, N. B., has been appointed assistant superintendent at that point, succeeding Mr. Robinson.

N. A. Meyer, assistant superintendent of transportation of the western lines of the Chicago, Milwaukee, St. Paul & Pacific, has been promoted to superintendent of transportation of the western lines, with headquarters as before at Seattle, Wash. **H. G. Fowler,** assistant superintendent of transportation of the eastern lines, has been promoted to superintendent of transportation of the same lines, with headquarters as before at Chicago. **M. K. Buckley** has been appointed assistant superintendent of transportation, with headquarters at Chicago, succeeding Mr. Fowler.

William A. Fitch, division superintendent of the Canadian National, with headquarters at Campbellton, N. B., retired from active service on December 27, under the pension regulations. Mr. Fitch was born in Kentville, Nova Scotia, on November 25, 1867. He entered the service of the Intercolonial in December, 1880, as telegraph operator, serving in that capacity at various stations between Halifax and St. John until

William A. Fitch

July, 1885, when he was appointed train dispatcher at Truro, later serving in the same position at Moncton and Campbellton. From March, 1903, to May, 1912, Mr. Fitch was chief dispatcher at Sydney, N. S., and on the latter date he was promoted to the position of assistant superintendent at Sydney. In January, 1927, he was appointed division superintendent at Campbellton, N. B., in which position he served until his retirement.

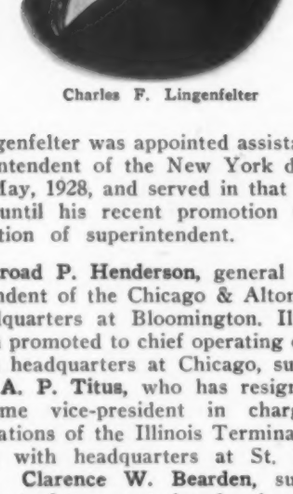
Charles F. Lingenfelter, who has been appointed superintendent of the Toledo division of the Pennsylvania, with headquarters at Toledo, O., was born in Altoona, Pa., on January 28, 1880. He was graduated from the Altoona High School and in February, 1898, entered the service of the Pennsylvania as a laborer. The following June he was appointed clerk and two years later he was appointed locomotive fireman. He subsequently served as locomotive engineman, assistant road foreman of engines on the Pittsburgh division and assistant freight trainmaster of the same division, and in March, 1920, he was appointed chief air brake inspector of

the Eastern region. He served as trainmaster of the Conemaugh division from November, 1923 to July, 1926, when he was appointed freight trainmaster of the New York division. Mr.

Charles F. Lingenfelter

Lingenfelter was appointed assistant superintendent of the New York division in May, 1928, and served in that capacity until his recent promotion to the position of superintendent.

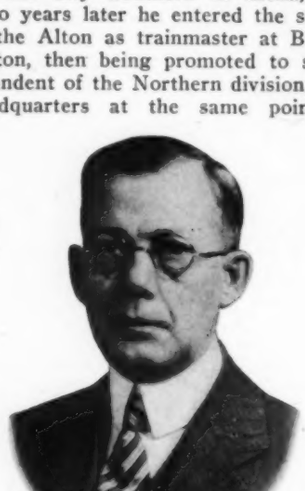
Stroad P. Henderson, general superintendent of the Chicago & Alton, with headquarters at Bloomington, Ill., has been promoted to chief operating officer, with headquarters at Chicago, succeeding **A. P. Titus,** who has resigned to become vice-president in charge of operations of the Illinois Terminal System, with headquarters at St. Louis, Mo. **Clarence W. Bearden,** superintendent of transportation, has been promoted to general superintendent, re-



Stroad P. Henderson

placing Mr. Henderson and with headquarters as before at Bloomington. **J. W. Murphy,** chief clerk to the chief operating officer, has been promoted to assistant to the chief operating officer, with headquarters at Chicago.

Mr. Henderson has been connected with the Alton for more than 18 years. He was born at Rolling Prairie, Ind., on September 11, 1874, and attended the public schools at Monticello, Ind. He entered railway service in October, 1891, as a telegraph operator on the Louisville, New Albany & Chicago (now the Chicago, Indianapolis & Louisville), at Monticello. From June, 1893, to February, 1905, Mr. Henderson served successively as telegraph operator and train dispatcher on the Chicago, Rock Island & Pacific at Rock Island, Ill., as train dispatcher on the Delaware, Lackawanna & Western at Hoboken, N. J., and as dispatcher, chief dispatcher and trainmaster on the Chicago, Cincinnati & Louisville (now part of the Chesapeake & Ohio) at Peru, Ind. He was then appointed superintendent of the Buffalo & Susquehanna at Galeton, Pa., where he remained until February, 1908, when he became trainmaster on the Kansas City Southern at Mena, Ark. Two years later he entered the service of the Alton as trainmaster at Bloomington, then being promoted to superintendent of the Northern division, with headquarters at the same point, in



Clarence W. Bearden

October, 1912. In June, 1914, he was transferred to the Southern division and in May, 1927, he was promoted to general superintendent. Mr. Henderson's further promotion to chief operating officer became effective on January 16.

Mr. Bearden was born at Spartanburg, S. C., on February 12, 1880, and has been in the service of the Alton for 26 years. He began his railway work in June, 1898, as a station helper on the Southern and in June, 1903, became train dispatcher on the Alton. Since that time Mr. Bearden has served consecutively on the Alton as chief dispatcher, as train master and as assistant superintendent. He was promoted to superintendent of transportation, with headquarters at Bloomington, on March 1, 1916.

Traffic

E. Frank Reed has been appointed industrial agent of the Boston & Maine, with headquarters at Boston, Mass.

C. E. Hodskin has been appointed western freight agent of the Mobile & Ohio, with headquarters at Denver, Colo.

R. K. Horton has been appointed general agent of the New York Central, with headquarters at Buffalo, N. Y., succeeding **F. E. McGrath,** promoted.

George F. LeDuc, commercial agent of the Boston & Maine, with headquarters at Boston, Mass., has been appointed New England freight agent, with the same headquarters.

J. T. Kingsley, general agent for the Chicago, Springfield & St. Louis and the Jacksonville & Havana at Pittsburgh, Pa., has been promoted to assistant general freight agent with headquarters at the same point. **W. J. Mitchell** has been appointed general agent for the two railroads at Chicago.

The St. Louis Southwestern has changed the titles of the following traffic officers, all of whom were commercial agents at the points indicated, to general agents, with the same respective headquarters. **E. P. Becker,** Cleveland, Ohio; **R. W. Byrne,** Cincinnati, Ohio; **F. W. Christopher,** Chicago; **J. T. Ferguson,** Shreveport, La.; **G. L. Leitner,** Detroit, Mich.; **T. A. McDonough,** Atlanta, Ga.; **F. E. Rownd,** Kansas City, Mo.; **C. E. Scott,** Pittsburgh, Pa.; **E. A. Senneff,** San Francisco, Cal.; **S. C. Yeaman,** New Orleans, La.

J. L. Meek, assistant general passenger agent of the Southern, with headquarters at Chattanooga, Tenn., has been transferred in the same capacity to Knoxville, Tenn. He will be replaced at Chattanooga by **James Freeman,** now division passenger agent at Birmingham, Ala. **C. B. Rhodes,** division passenger agent at Macon, Ga., has been promoted to the position of assistant general passenger agent at Birmingham. **W. E. McGee,** division passenger agent at Columbia, S. C., has been promoted to assistant general passenger agent at that point. **W. C. Spencer,** district passenger agent at Philadelphia, Pa., has been promoted to division passenger agent at New Orleans, La. **C. D. Whitworth** has been appointed district passenger agent at Chattanooga, Tenn., and **G. R. Pettit** has been appointed to a similar position at Macon, Ga.

H. W. Siddall, secretary of the Trans-Continental Passenger Association, has been elected chairman of that organization, the Western Military Bureau, the Tourist Travel Clearing Agency and the General Folder Distributing Agency, with headquarters as before at Chicago, succeeding **E. L. Bevington,** deceased. **H. P. Bronson,** chief of the Western Military Bureau, has been appointed secretary of the Trans-Continental Passenger Association and its three subsidiary organizations, succeeding Mr. Siddall. Mr. Siddall has been in some form of railway service for more than 30 years. He was born on April 1, 1885, at Evanston, Ill., and began railway work at the age of 13 years in the passenger department of the Chicago, Milwaukee & St. Paul at Chicago. He continued with that railroad in various capacities, including

that of passenger rate work, until 1918, when he became connected with the passenger section of the division of traffic of the United States Railroad Administration at Washington, D. C. At the close of federal control in 1920, Mr. Siddall returned to the Milwaukee, then later in the same year being appointed secretary of the Trans-Continental Association. His election as chairman became effective on January 1.

Engineering, Maintenance of Way and Signaling

A. F. Kadow, attached to the office of the chief engineer of the Chicago & Alton at Chicago, has been promoted to assistant engineer at Bloomington, Ill., succeeding **Walter T. Biggs,** who has resigned to become associated with the Colianni & Dire Co., railroad contractors, at Chicago.

J. S. Albright, assistant to the engineer of maintenance of way of the Lake division of the Pennsylvania, with headquarters at Cleveland, Ohio, has been promoted to division engineer in the office of the general manager of the Central region, with headquarters at Pittsburgh, Pa. **S. H. Kuhn,** supervisor at Burgettstown, Pa., has been promoted to assistant to the engineer of maintenance of way of the Lake division, succeeding Mr. Albright.

Ferdinand M. Hawthorne, who has been promoted to engineer of maintenance of way of the Lake division of the Pennsylvania, with headquarters at Cleveland, Ohio, has been in the service of that railway for more than 20 years. He was born in Tippecanoe county, near Lafayette, Ind., on October 8, 1883,

Ferdinand M. Hawthorne

and attended country school and De Pauw Preparatory School, graduating from a course in civil engineering at Purdue University in 1905. Mr. Hawthorne entered railway service on the Pennsylvania at Columbus, Ohio, in June, 1905, as an assistant on the engineer corps. From 1909 to 1917 he was transferred successively to the Louisville, Pittsburgh, Eastern and Cleveland & Pittsburgh divisions and in May of the latter year he was advanced to assistant division engineer at Louisville, Ky. Later he was transferred successively to Terre Haute, Ind., Pittsburgh, Pa., and New Castle, Pa., and on March 1, 1920, he was promoted to division engineer of the Logansport division at Logansport, Ind. Later Mr. Hawthorne was transferred to Terre Haute, Ind., where he remained until August 1, 1926, when he was appointed acting superintendent of the Terre Haute division. He returned to the engineering department as division engineer and was transferred to Cleveland in January, 1927, and in June of the same year to the Philadelphia (Pa.) terminal. His promotion to engineer of maintenance of way of the Lake division became effective November 16.

George M. Davidson, industrial engineer of the Chicago & North Western, and president of the Superior Coal Company, a mining subsidiary of that railroad, who retired from active service on January 1, had been with the North Western for nearly 43 years. He was born at Newark, Ohio, on December 8,

George M. Davidson

1858, and attended the Newark public schools and Williston Academy at East Hampton, Mass., and graduated from Dartmouth College in 1880. During two summer vacations he worked as a chemist in a private laboratory at Hanover, N. H., and for several months after graduation from college he surveyed coal mines for the Ohio Central Coal Company at Corning, Ohio. In 1881 he became assistant chemist for the Cambria Steel Company at Johnstown, Pa., and later was transferred to the open hearth steel department. Mr. Davidson entered railway service in 1886 as chemist for the North Western and established the first railway chemical laboratory in Chicago. Two years later he was also appointed engineer of tests of the North Western and chemist and engineer of tests of the Chicago, St. Paul, Minneapolis & Omaha, organizing a complete testing department equipped to make both chemical and physical tests of all materials used by the railway. In 1903 he perfected a system of softening water for locomotive use and later he developed a method of timber preservation. Mr. Davidson was appointed industrial engineer of the North Western, with supervision over laboratories, water supply, timber preservation and fuel consumption, and president of the Superior Coal Company in 1921. Following his retirement under the pension rules of the company he will make a trip abroad which will include the World's Engineering Congress in Japan.

Purchases and Stores

Jesse B. Noyes, who has been promoted to general storekeeper of the Minneapolis, St. Paul & Sault Ste. Marie; the Duluth, South Shore & Atlantic and the Mineral Range, with headquarters at Minneapolis, Minn., has been connected with the former railway and the Wisconsin Central for more than 29 years. He was born on December 13, 1877, at Baraboo, Wis., and entered railway service as a clerk on the Wisconsin Central on December 16, 1899. During the following 10 years Mr. Noyes was advanced through the positions of traveling storekeeper and local storekeeper and when the Wisconsin Central was leased by the Soo line on May 1, 1910, he became division storekeeper on the latter road at Fond du Lac, Wis. On May 1, 1920, he was transferred to Minneapolis. His promotion to general storekeeper of the three railways became effective on January 1.

Charles R. Peddle, assistant purchasing agent of the Pennsylvania, with headquarters at St. Louis, Mo., who retired on January 1, has been in railway service for more than 51 years. He was born at Terre Haute, Ind., on December 25, 1858, and entered railroad service at the age of 19 years as a messenger in the office of the superintendent of motive power and machinery of the Terre Haute & Indianapolis (now part of the Pennsylvania) at Terre Haute. For the following 16 years he advanced successively through the positions of operator and clerk in that department and clerk in the purchasing department and on May 1, 1893, he was promoted to purchasing agent, with headquarters at Indianapolis, Ind. When the T. H. & I. was acquired by the Vandalia on January 1, 1905, Mr. Peddle was appointed purchasing agent of the latter company, with headquarters at St. Louis. On January 1, 1917, his title was changed to assistant purchasing agent in charge of the lines west of Pittsburgh, Pa., and on March 1, 1920, he returned to St. Louis as purchasing agent of the Southern region. With the reorganization of the purchasing department on January 16, 1924, Mr. Peddle was appointed assistant purchasing agent at St. Louis.

Mechanical

C. Y. Thomas, night roundhouse foreman of the Kansas City Southern at Port Arthur, Tex., has been appointed chief locomotive inspector, with jurisdiction over the system and with headquarters at Pittsburg, Kan., reporting to the general manager.

Arthur H. Fetters, mechanical engineer of the Union Pacific unit of that system, has been promoted to general mechanical engineer of the Union Pacific system, with headquarters as before at Omaha, Neb. **James H. Connor,** special representative of the superintendent of motive power and machinery of the Union Pacific unit, has been promoted to special representative of the general superintendent of motive power and machinery of the system, with headquarters at Omaha. **C. W. Smith,** inspector of shop standards; **A. J. Harner,** lubrication engineer; **M. C. Haber,** engineer of road tests, and **J. K. Peters,** assistant to the mechanical engineer of the Union Pacific unit, have been appointed to corresponding positions on

Arthur H. Fetters

the system, with headquarters at Omaha. Mr. Fetters has been in the service of the Union Pacific for nearly 28 years. He was born at Philadelphia, Pa., on July 14, 1871, and graduated from Lehigh University in mechanical engineering in 1892. For the following seven years Mr. Fetters was connected with the Baldwin Locomotive Works, entering railway service in 1899 as chief draftsman in the mechanical department of the Erie. From April to August, 1901, he again served with the Baldwin Locomotive Works, then being appointed chief draftsman in the mechanical department of the Union Pacific. Later he was advanced to assistant mechanical engineer and in 1904 to mechanical engineer of the U. P. unit of the system. His further promotion to general mechanical engineer became effective on January 11.

Obituary

George A. Park, general immigration and industrial agent of the Louisville & Nashville, with headquarters at Louisville, Ky., died on January 10 at his home in that city.

L. E. Chaffin, assistant auditor of the Longview, Portland & Northern, with headquarters at Longview, Wash., died on January 6 in the United States Veterans hospital at Portland, Ore.

William R. Harley, secretary of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., died in that city on January 11.

C. B. Glenn, paymaster of the Nashville, Chattanooga & St. Louis since 1881, with headquarters at Nashville, Tenn., died from influenza at his home in that city on January 8, at the age of 77 years.

Fred L. O'Leary, treasurer of the Wabash from 1890 to 1918, died at Watertown, N. Y., on January 14 at the age of 76 years. During federal control of the railroads Mr. O'Leary served as federal treasurer of the Wabash, retiring from active duty in 1921 as assistant to the comptroller of the same road.

Major Graham A. Bell, deputy minister of railways and canals of the Dominion of Canada, and the Canadian government's representative on the board of directors of the Canadian National, died on January 13, in Ottawa, Ont., at the age of 54. He had been confined to a hospital for nine weeks with the typhoid infection which caused his death. Major Bell was born at Perth, Ont., on August 13, 1874, and first entered the service of the Dominion government in 1890 as a clerk in the Post Office Department. Two years later, in 1892, he was transferred to the

Major Graham A. Bell

Railway Department, where he remained continuously until the time of his death. During the early years of this service, Major Bell was advanced successively until 1919, when he became deputy minister. He played an important part in adjusting the finances of the Canadian Northern, the Grand Trunk Pacific and the Grand Trunk and when the various lines were consolidated into the Canadian National, he became the connecting link between the government and the railway system by virtue of his election as the government's representative on the Canadian National board. During the war he was a major in Canada's Forty-third Rifle Regiment at Ottawa.

Ernest Sylvanus Benson, comptroller of the Chicago & Alton, with headquarters at Chicago, who died at Phoenix, Ariz., on December 31, had been in railway service for 57 years. Mr. Benson was born at Blackstone, Mass., on May 25, 1855, and after attending public school at Blackstone, he went to Dean Academy, Franklin, Mass. He first began railway work at the age of 16 as a clerk in the local office of the Chicago, Burlington & Quincy at Streator, Ill. From 1873 to 1889 he served successively as chief clerk in the office of the auditor of the Chicago & Paducah at Chicago, traveling auditor on the Wabash, St. Louis & Pacific (both now parts of the Wabash) at St. Louis, Mo., cashier of the Wabash at Chicago and auditor of the Indiana, Illinois & Iowa (now part of the New York Central) at Kankakee, Ill. He was then appointed auditor of the Iowa Central (now the Minneapolis & St. Louis) and until 1907 was successively auditor and general auditor for

Ernest Sylvanus Benson

that railroad, general auditor for the receiver of the Oregon Railway & Navigation Company (now the Oregon-Washington Railway & Navigation Company) at Portland, Ore., auditor and general auditor of the reorganized O. R. R. & N. Co., and the Portland & Asiatic Steamship Company, auditor of several roads which now are part of the Southern Pacific lines in Texas and Louisiana at Houston, Tex., and general auditor of the Panama Rail Road, the Panama Rail Road Steamship Line and the Isthmian Canal Commission at Washington, D. C. In October, 1907, Mr. Benson became consulting accountant for the Interborough Metropolitan Company at New York and two years later he was appointed comptroller of the Toledo, St. Louis & Western (now part of the New York, Chicago & St. Louis) the Chicago & Alton, the Iowa Central and the Minneapolis & St. Louis at Chicago. His connection with the Iowa Central and the M. & St. L. ended in 1910 and with the T., St., L. and W. in 1912. He had been continuously with the Chicago & Alton since October 1, 1909.